REPORT OF THE

TENTH ANNUAL MEETINGS

OF THE

NORTH AMERICAN COMMISSION

7-11 JUNE 1993
EDINBURGH, UK

NORTH-EAST ATLANTIC COMMISSION

7-11 JUNE 1993
EDINBURGH, UK

WEST GREENLAND COMMISSION

7-11 JUNE 1993
EDINBURGH, UK

TABLE OF CONTENTS

	PAGE
REPORT OF THE NORTH AMERICAN COMMISSION	1
REPORT OF THE NORTH-EAST ATLANTIC COMMISSION	181
REPORT OF THE WEST GREENLAND COMMISSION	217

REPORT OF THE

TENTH ANNUAL MEETING

OF THE

NORTH AMERICAN COMMISSION

7-11 JUNE 1993
EDINBURGH, UK

CHAIRMAN:	MR JEAN-PAUL DUGUAY (CANADA)
VICE-CHAIRMAN:	MR ALLEN E PETERSON (USA)
RAPPORTEUR:	DR DEAN SWANSON (USA)
SECRETARY:	DR MALCOLM WINDSOR

NAC(93)15

CONTENTS

		PAGE
REPORT OF THE TENTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION, 7-11 JUNE 1993, EDINBURGH, UK		5
ANNEX 1	LIST OF PARTICIPANTS	9
ANNEX 2	AGENDA, NAC(93)14	13
ANNEX 3	REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT, CNL(93)13, (SECTION 4)	15
ANNEX 4	NAC SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS, REPORT OF ACTIVITIES 1992/93, NAC(93)9	23
ANNEX 5	IMPACT OF ACID RAIN ON ATLANTIC SALMON, NAC(93)6	61
ANNEX 6	STATUS OF ATLANTIC SALMON STOCKS IN THE UNITED STATES OF AMERICA IN 1992, NAC(93)13	63
ANNEX 7	STATUS OF ATLANTIC SALMON STOCKS IN 1992, TABLED BY CANADA, NAC(93)11	73
ANNEX 8	1993 ATLANTIC SALMON MANAGEMENT PLAN, TABLED BY CANADA, NAC(93)12	109
ANNEX 9	DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES, CNL(93)50	163
ANNEX 10	NASCO TAG RETURN INCENTIVE SCHEME - 1993 PRIZES, NAC(93)7	165
ANNEX 11	SALMON FISHERIES ON ST PIERRE ET MIQUELON, NAC(93)4	167
ANNEX 12	LIST OF NORTH AMERICAN COMMISSION PAPERS	179

NAC(93)15

REPORT OF THE TENTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION OF THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION 7-11 JUNE 1993, BALMORAL HOTEL, EDINBURGH, SCOTLAND

1. OPENING OF THE MEETING

1.1 The Tenth Annual Meeting of the North American Commission was opened by the Chairman, Mr Jean-Paul Duguay (Canada), who welcomed delegates to Edinburgh.

1.2 A list of participants is given in Annex 1.

2. ADOPTION OF THE AGENDA

2.1 The Commission adopted its agenda, NAC(93)14, (Annex 2) following the inclusion of two new agenda items concerning the attendance of non-government observer organizations at the Commission meetings, and salmon fisheries on St Pierre et Miquelon.

3. NOMINATION OF A RAPPORTEUR

3.1 The Commission nominated Dr Dean Swanson (USA) as Rapporteur for the meeting.

4. NON-GOVERNMENT OBSERVERS AT COMMISSION MEETINGS

4.1 The Commission considered the question of attendance of non-government observer organizations at its meetings in the light of the recommendation of the Council to extend, from 1994, the rights of NGO's to include attendance at the meetings of the regional Commissions. The Commission endorsed the recommendation of the Council on this matter and agreed to permit attendance of NGO's as observers at its meetings, in accordance with Rule 28 of its Rules of Procedure, for a trial period of two years commencing in 1994.

5. ACFM REPORT FROM ICES ON SALMON STOCKS "SALMON IN THE NORTH AMERICAN COMMISSION AREA"

5.1 The Chairman of the ACFM, Dr Fredric Serchuk, presented the Scientific Advice from ICES relevant to the North American Commission, CNL(93)13, (Annex 3) prepared in response to a request from the Commission at its Ninth Annual Meeting.

6. REPORT OF THE NAC SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

6.1 The Co-Chairman of the NAC Scientific Working Group on Salmonid Introductions and Transfers, Mr Rex Porter (Canada), presented a report on the activities of the group in 1992/93, NAC(93)9, (Annex 4).

6.2 At its Ninth Annual Meeting the Commission had adopted Protocols for the Introduction and Transfer of Salmonids. It had been recommended that these be submitted to the Secretariat for publication in English and French. The Protocols had been printed in full in English and distributed prior to the meeting. Summary Protocols in English and French were distributed to the Commission at the meeting and would be widely circulated to the various North American agencies.

6.3 The representative of the US referred to the need for the Working Group to continue its work to ensure that the Protocols were implemented. The representative of Canada stated that the Protocols had been sent to the appropriate authorities for implementation and that he would report on progress to the Commission at its annual meetings.

7. IMPACT OF ACID RAIN ON ATLANTIC SALMON

7.1 The Secretary referred to paper NAC(93)6, (Annex 5). At its Ninth Annual Meeting the Commission considered a response from the US Co-Chair to questions posed to the Air Quality Committee of the Canada-US Air Quality Agreement concerning the sources of SO_2 emissions and the effectiveness of control programmes in promoting a return to naturally occurring pH levels in affected salmon rivers in eastern Canada and the US. The Commission had requested the Secretary to contact the Co-Chairs with a view to holding a Working Group meeting of atmospheric and fisheries scientists from the US and Canada to develop a complete response to the questions. Following the meeting a response to the questions had also been received from the Canadian Co-Chair and this had been circulated to Commissioners by the Secretary with a request for guidance as to whether the Commission wished to proceed with the Working Group meeting.

7.2 The representative of Canada referred to Canada's commitment to reduce SO_2 emissions in Eastern Canada to 3.2 million tonnes per year by the end of 1994. He added that no further action within the Commission would be required until the control programme is implemented and the results of this programme can be evaluated. The representative of the US agreed that no further action was required by the Commission for the time being.

8. REVIEW OF THE 1992 FISHERY

8.1 The representative of the US tabled paper NAC(93)13, (Annex 6) describing the status of Atlantic salmon stocks in the United States in 1992. The representative of Canada tabled paper NAC(93)11, (Annex 7) describing the status of Atlantic salmon stocks in Canada in 1992.

9. REVIEW AND DISCUSSION OF THE PROPOSED 1993 CANADIAN AND US SALMON MANAGEMENT MEASURES AS THEY RELATE TO THE MANDATE OF THE COMMISSION AND TO THE FINDINGS OF THE ACFM REPORT FROM ICES

9.1 The representative of the US reported that the management measures implemented in 1992 would remain in force in 1993. The representative of Canada tabled paper NAC(93)12, (Annex 8) describing the Canadian Salmon Management Plan for 1993.

10. RECOMMENDATIONS TO THE COUNCIL ON SCIENTIFIC RESEARCH

10.1 At its Ninth Annual Meeting the Commission had appointed Dr Kevin Friedland (USA) and Dr Wilfred Carter (Canada) to represent the Commission on the Standing Scientific Committee.

10.2 The Commission reviewed document, SSC(93)5, and following minor modifications agreed to recommend it to the Council as part of the annual request to ICES for scientific advice. The request to ICES for Scientific Advice agreed by the Council, CNL(93)50, is contained in Annex 9.

11. REPORT ON THE NASCO TAG RETURN INCENTIVE SCHEME AND ANNOUNCEMENT OF AWARDS

11.1 The Chairman announced that the draw for the prizes in the Tag Return Incentive Scheme was made by the Auditor at NASCO Headquarters on 28 May 1993. The winner of the first prize was Greg Archer, Portland, Connecticut, US. A list of all prize winners was presented to the Commission, NAC(93)7, (Annex 10). The Commission offered its congratulations to all of the winners.

12. SALMON FISHERIES ON ST PIERRE ET MIQUELON

12.1 The Secretary introduced a paper NAC(93)4, (Annex 11) providing catch statistics for the salmon fisheries on St Pierre et Miquelon. The catch in 1992 was the second highest in the time series 1987-1992. The paper also included details of the legislation concerning the salmon fisheries on St Pierre et Miquelon which had been provided by the French authorities. The Commission confirmed that it wished to continue to receive reports on the fisheries at St Pierre et Miquelon based on information obtained by the Secretary.

13. OTHER BUSINESS

13.1 There was no other business.

14. DATE AND PLACE OF THE NEXT MEETING

14.1 The Commission agreed to hold its next annual meeting during the Eleventh Annual Meeting of the Council, 6-10 June 1994, in Norway.

15. CONSIDERATION OF THE DRAFT REPORT OF THE MEETING

15.1 The Commission agreed the draft report of the meeting, NAC(93)5.

ANNEX 1

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION
TENTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION
7-11 JUNE 1993, EDINBURGH, UK

LIST OF PARTICIPANTS

* Denotes Head of Delegation

CANADA

*MR JEAN E HACHE	Representative Department of Fisheries and Oceans, Ottawa, Ontario
DR WILFRED CARTER	Representative Atlantic Salmon Federation, St Andrews, New Brunswick
MR JEAN-PAUL DUGUAY	Representative Gaspé, Quebec
DR JOHN M ANDERSON	Atlantic Salmon Federation, St Andrews, New Brunswick
MR RICHARD HEGAN	Department of Fisheries and Oceans, Ottawa, Ontario
MR GLEN JEFFERSON	Department of Fisheries and Oceans, Halifax, Nova Scotia
MR JIM B JONES	Department of Fisheries and Oceans, Moncton, New Brunswick
MR KEN JONES	Department of Fisheries and Oceans, Ottawa, Ontario
MR DAVID MEERBURG	Vice-President of NASCO Department of Fisheries and Oceans, Ottawa, Ontario
MR REX PORTER	Department of Fisheries and Oceans, St Johns, Newfoundland

USA

*MR ALLEN PETERSON	Representative National Marine Fisheries Service, Woods Hole, Massachusetts

MR DAVID EGAN	Representative Connecticut River Atlantic Salmon Commission, Guilford, Connecticut
MR CLINTON TOWNSEND	Representative Maine Council of the Atlantic Salmon Federation, Canaan, Maine
DR VAUGHN ANTHONY	National Marine Fisheries Service, Woods Hole, Massachusetts
MS JANE CLEAVES	Atlantic Salmon Federation, Brunswick, Maine
DR KEVIN FRIEDLAND	National Marine Fisheries Service, Woods Hole, Massachusetts
DR JAMIE GEIGER	US Fish and Wildlife Service, Hadley, Massachusetts
MR ROBERT A JONES	Connecticut River Salmon Association, S. Windsor, Connecticut
MR ARTHUR NEILL	National Marine Fisheries Service, Woods Hole, Massachusetts
MR RICHARD ROE	National Marine Fisheries Service, Gloucester, Massachusetts
DR DEAN SWANSON	National Marine Fisheries Service, Silver Springs, Maryland
MR STETSON TINKHAM	Department of State, Office of Fisheries Affairs, Washington DC

OBSERVERS - PARTIES

EEC

MR ERNESTO PENAS	Representative Commission of the European Communities, Brussels
MS MARIA ARAGON	Ministry of Agriculture, Fisheries and Food, Madrid, Spain
DR GUY MAWLE	National Rivers Authority, Bristol
MR TED POTTER	Ministry of Agriculture, Fisheries and Food, Lowestoft
MR BOB WILLIAMSON	Scottish Office Agriculture and Fisheries Department, Edinburgh

ICES

DR EMORY D ANDERSON	International Council for the Exploration of the Sea, Copenhagen
DR ROGER BAILEY	International Council for the Exploration of the Sea, Copenhagen
DR FREDRIC M SERCHUK	National Marine Fisheries Service, Woods Hole, Massachusetts

SECRETARIAT

DR MALCOLM WINDSOR	Secretary
DR PETER HUTCHINSON	Assistant Secretary
MISS MARGARET NICOLSON	PA to Secretary
MRS THERESA GAWTHORNE	PA

ANNEX 2

NAC(93)14
TENTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION
7-11 JUNE 1993, BALMORAL HOTEL, EDINBURGH, SCOTLAND, UK

AGENDA

1. Opening of the Meeting
2. Adoption of the Agenda
3. Nomination of a Rapporteur
4. Non-Government Observers at Commission Meetings
5. ACFM Report from ICES on Salmon Stocks in the Commission Area
6. Report of the NAC Scientific Working Group on Salmonid Introductions and Transfers
7. Impact of Acid Rain on Atlantic Salmon
8. Review of the 1992 Fishery
9. Review and Discussion of the Proposed 1993 Canadian and US Salmon Management Measures as they relate to the Mandate of the Commission and to the Findings of the ACFM Report from ICES
10. Recommendations to the Council on Scientific Research
11. Report on the NASCO Tag Return Incentive Scheme and Announcement of Awards
12. Salmon Fisheries on St Pierre et Miquelon
13. Other Business
14. Date and Place of the Next Meeting
15. Consideration of the Draft Report of the Meeting

ANNEX 3

COUNCIL

CNL(93)13

REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT

(SECTION 4)

4. INFORMATION OF INTEREST TO THE NORTH AMERICAN COMMISSION

4.1 Description of the Fisheries in Canada

The following were new management measures for commercial fisheries in 1992:

1) A 5-year moratorium was implemented for the commercial fishery in insular Newfoundland. Fishing was permitted in Labrador Salmon Fishing Areas (SFA) 1, 2 and 14B. Quotas in SFAs 2 and 14B were reduced from those of 1991 by 20 t in SFA 2 and 2 t in SFA 14B. SFA 1 had an allowance of 80 t, the same as 1990 and 1991; an allowance is an estimate of expected catch and not a limitation on allowable harvest. Monitoring of the quotas was conducted by Fisheries Officers who were in contact with buyers and fishermen on a weekly or daily basis.

   A voluntary commercial salmon license buy-back program was also implemented for fishermen in SFAs 2-14. Fishermen were allowed to apply for the buy-back until 31 December 1992.

2) In Quebec, commercial fishing quotas were reduced in area Q 7 by 52% (from 1809 to 875 fish) from 1991, commensurate with a reduction in the number of licences under a buy-back program. In Q 8 and Q 9, the quotas were reduced by 26% and 9%, respectively.

The following were new management measures for recreational fisheries in 1992:

1) The seasonal bag limit for the recreational fishery of Newfoundland-Labrador, Nova Scotia, and New Brunswick was reduced from 10 to 8 fish (SFAs 1-16, and 18-23). In Prince Edward Island (SFA 17), the seasonal and daily limits were reduced from 10 and 2 to 7 and 1, respectively. Most rivers of the inner Bay of Fundy (SFA 22 and parts of SFA 23) were not opened to recreational fishing for conservation reasons. As in previous years, large salmon could be retained as part of seasonal and daily limits only in Labrador (SFAs 1, 2, and 14B) and in Quebec.

2) Quotas for each SFA were introduced for the first time to the recreational fisheries of Newfoundland and Labrador. All rivers of each SFA were closed to retention of salmon after the quota in each SFA was reached. Some rivers of SFAs 11, 13 and 14 were managed by individual river quotas.

3) There were minor changes in angling seasons relative to previous years.

The total catch of Atlantic salmon in Canada was 470 t in 1992. Catch was distributed between recreational (42%), native (7%), and commercial (51%) fisheries. Commercial catch and quotas by SFA are shown in the text table below:

1992

SFA	Catch (t)	Quota (t)
1	20	80[1]
2	132	180
13-14	17	13
Q7-9	73	NA[2]
Q11	0	15

[1]Allowance
[2]Not applicable

Catches in the Newfoundland commercial fishery are given in the text table below:

Newfoundland commercial fishery

Year	1987	1988	1989	1990	1991	1992
Catch (t)	1,485	972	867	618	454	168[1]

[1]Preliminary

4.1.1 Composition and origin of the catch, 1992

Only salmon of Canadian and USA origin were caught in Canada during 1992. Recaptures of tagged 1SW salmon of USA and Canadian origin occurred in the Newfoundland and Labrador fisheries.

4.1.2 Historical data on tag returns and harvest estimates

ACFM updated the time series of Carlin tag returns and harvest estimates of Maine-origin 1SW salmon in Newfoundland and Labrador. The total harvest of 1,425 Maine-origin salmon in the 1991 fishery was distributed primarily in SFAs 3 and 4.

Carlin harvest, Maine-origin salmon

Year	1986	1987	1988	1989	1990	1991
Harvest	552	580	393	1,722	780	1,425

Comparative harvest estimates based on CWT and Carlin tag recoveries were calculated for the communities, Statistical Sections and SFAs covered by port sampling. The ratio of harvest estimation methods (Carlin/CWT) was consistently less than 1.0 for the Statistical Sections and SFAs where harvests occurred. Previous comparisons of Carlin and coded wire tag harvest estimates generally indicated coded wire tag estimates were greater than Carlin estimates. This reversal would be consistent with the effect of Carlin tag reporting rates that are higher than the levels assumed in the Carlin harvest model.

4.2 Description of Fisheries in United States of America

The average exploitation rate (6.8%) on combined age classes in the Penobscot River for 1992 was lower than for 1991 (11.5%). The reasons for the change in 1992 were attributed to the new management measure enacted (reduction of season limit from 5

to 1) and a conscious effort by Penobscot River anglers to reduce the harvest of salmon caught early in the season. The estimated number of salmon caught and released in Maine rivers exceeded the number caught and killed by a margin of 2:1.

4.3 Description of Fisheries in France (Islands of St. Pierre and Miquelon)

The catch of salmon for the islands of St. Pierre and Miquelon in 1992 was 1.3 t (Table 1.1.1). The most recent information on fishing effort is for 1989 when there were 13 professional and 37 recreational fishermen fishing for salmon. Tag returns from previous years indicate that salmon of Canadian and USA-origin have been caught in the fisheries of St. Pierre and Miquelon.

4.4 Evaluate the Effects of Quota Management Measures and Closures Taken in 1991 and 1992 in Newfoundland-Labrador Commercial Fisheries

4.4.1 Effects on Canadian stocks and fisheries

1991 Quota management measures

The quantities of large and small salmon affected by the early closure of the fisheries in 1991, owing to quota management measures, were evaluated by applying the closure date in each SFA in 1991 to the temporal distribution of the landings in each SFA and year, for 1984-1989. With respect to small salmon, the estimated mean tonnage of salmon not caught was 21 t (about 12,600 fish) while for large salmon it was 9 t (2,500 fish).

The estimated average numbers of small (12,600) and large (2,500) salmon not caught in 1991 are about 70% less than the estimated numbers not caught in 1990. The quota had the greatest effect in reducing numbers of small salmon caught in SFAs 10, 11 and 13, while the largest reduction in number of large salmon caught occurred in SFA 11.

1992 Commercial salmon fishery moratorium

The only data available to evaluate the effects of the closure of the commercial fisheries were recreational catch statistics and the counts of salmon on several river systems.

The total recreational catch of small salmon (23,127) retained up to the date quotas were reached in each of the SFAs 3-14A in 1992 increased by 113% over 1991. There was considerable variation in changes in catches from 1992 to 1991 and 1984-1989 among SFAs which may be related to variation in: 1) commercial exploitation rates among stocks; 2) abundance of salmon among SFAs; and 3) exploitation rates in the recreational fisheries among rivers and years. The recreational quotas in 1992 had the effect of eliminating angling catches in the latter part of the season and dramatically reducing angling effort during the hook-and-release component of the fishery.

In southern Labrador (SFAs 2 and 14B), where large salmon could be retained, the early closure appeared to have resulted in the higher exploitation of large salmon over small fish due to the early entry of large salmon to the rivers.

In comparison to the 1984-1989 means, the numbers of small salmon counted in 1992 increased along the northeast and east coasts (SFAs 4-5), generally decreased along the south coast (SFAs 9 and 11) with Northeast River (SFA 10) the exception, and again increased in west coast Newfoundland (SFA 14A) (Figure 4.4.1.1). Except for Northeast Brook, Trepassey, counts of large salmon increased over 1991. In comparison to the 1984-1989 mean, increases occurred for all rivers except Biscay Bay River and Northeast Brook, Trepassey, and Conne River. These rivers are located along the south coast of insular Newfoundland.

If the 1992 moratorium had been in effect during 1984-1989 the estimated weight of salmon not caught per year would have been 403 t of small salmon (227,000 fish) and 314 t of large salmon (78,500 fish).

4.4.2 Effects on USA stocks

ACFM evaluated the effects of the 1991 quota regime on USA stocks harvested in the Newfoundland-Labrador fishery by determining the percentage of Maine-origin salmon that would not have been caught in previous fisheries had the closing dates observed in 1991 been in force. The small numbers of salmon harvested and the variability in the percentage of harvest foregone makes it difficult to evaluate the closure. The mean percentage of 1SW Maine-origin salmon which would not have been caught in SFAs affected by the quota during the period 1984-1989, if the 1991 closure date were in force, is 16%.

The effects of the 1992 moratorium can be estimated directly. In SFAs 1-14a, affected by the moratorium, nearly 100% (i.e. some by-catch in other gears will still occur) of the harvest would be expected to be foregone. The average harvest in these SFAs during the period 1984-1989 was 763 salmon out of an average total harvest of 1,144 fish per year. Thus, within this base period, 67% of the harvest of Maine-origin salmon would have been foregone. A similar percentage of harvests foregone would be expected for Merrimack- and Connecticut-origin salmon.

4.5 By-catch and mortality of salmon in non-directed fisheries

ACFM concluded that adult salmon appear to be caught in low frequencies in non-directed fisheries. The tonnage appears to be negligible relative to the unreported catch in salmon gear. Data were not available to estimate actual tonnage losses in by-catch fisheries. In the North American Commission area, landing of salmon by-catch is not permitted. Thus estimates of by-catch loss are partially addressed in the estimates of unreported catches, when these arise from illegal landings in non-salmon gear.

4.6 Effects of the NASCO Tag Return Incentive Scheme

Angler reporting rate in the Gulf Region, Canada

Tag recovery rates for adult salmon in the Miramichi (1971-75, 1985-91) and on the Margaree (1987-92) rivers were examined. Though slight increases in recovery rate were observed, none of the increases were statistically significant.

Reporting rates for Maine tags

Tag recoveries in distant fisheries were considered in relation to estimated counts of tag returns to Maine rivers. The results of the analysis suggest that the magnitude of the reporting rate change for tags recovered in Canada was less than the inherent variability in the historical relationship between fishery and homewaters recoveries.

Table 1.1.1 Nominal catch of SALMON by country (in tonnes round fresh weight), 1960-1992 (1992 provisional figures).

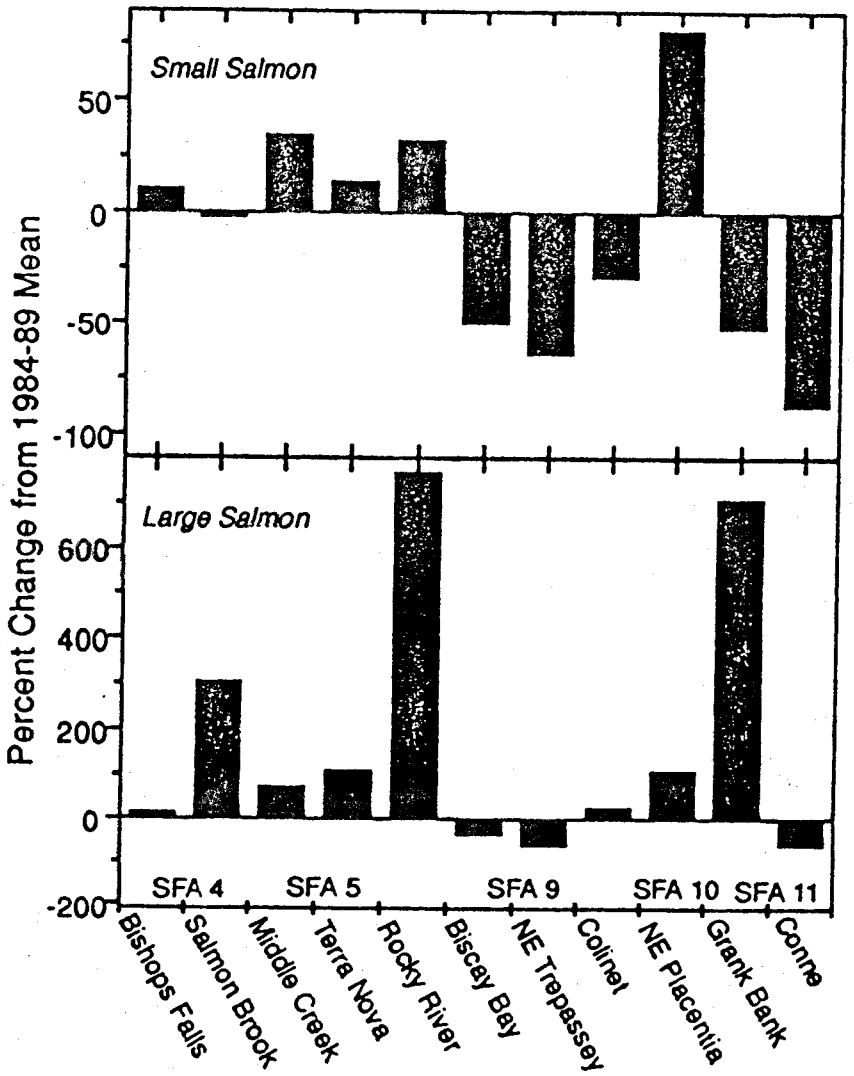
Year	Canada (5)	Den.	Faroes	Finland	France	East Grld.	West Grld.	Iceland	Ireland (1, 3)	Norway (4)	Russia	St. P & M.	Sweden (WC)	UK E&W	UK Scotland	UK N.I.(1,2)	USA	Others (6)	Total
1960	1636	-	-	-	-	-	60	100	743	1659	1100	-	40	283	1443	139	1	-	7204
1961	1583	-	-	-	-	-	127	127	707	1533	790	-	27	232	1185	132	1	-	6444
1962	1719	-	-	-	-	-	244	125	1459	1935	710	-	45	318	1738	356	1	-	8650
1963	1861	-	-	-	-	-	466	145	1458	1786	480	-	23	325	1725	306	1	-	8576
1964	2069	-	-	-	-	-	1539	135	1617	2147	590	-	36	307	1907	377	1	-	10725
1965	2116	-	-	-	-	-	861	133	1457	2000	590	-	40	320	1593	281	1	-	9392
1966	2369	-	-	-	-	-	1370	106	1238	1791	570	-	36	387	1595	287	1	-	9750
1967	2863	-	-	-	-	-	1601	146	1463	1980	883	-	25	420	2117	449	1	-	11948
1968	2111	-	5	-	-	-	1127	162	1413	1514	827	-	20	282	1578	312	1	403	9755
1969	2202	-	7	-	-	-	2210	133	1730	1383	360	-	22	377	1955	267	1	893	11540
1970	2323	-	12	-	-	-	2146	195	1787	1171	448	-	20	527	1392	297	1	922	11241
1971	1992	-	-	-	-	-	2689	204	1639	1207	417	-	18	426	1421	234	1	471	10719
1972	1759	-	9	32	34	-	2113	250	1804	1568	462	-	18	442	1727	210	1	486	10915
1973	2434	-	28	50	12	-	2341	256	1930	1726	772	-	23	450	2006	182	2.7	533	12746
1974	2539	-	20	76	13	-	1917	225	2128	1633	709	-	32	383	1708	184	0.9	373	11941
1975	2485	-	28	76	25	-	2030	266	2216	1537	811	-	26	447	1621	164	1.7	475	12209
1976	2506	-	40	66	9	<1	1175	225	1561	1530	772	2.5	20	208	1019	113	0.8	289	9536
1977	2545	-	40	59	19	6	1420	230	1372	1488	497	-	10	345	1160	110	2.4	192	9495
1978	1545	-	37	37	20	8	984	291	1230	1050	476	-	10	349	1323	148	4.1	138	7650
1979	1287	-	119	26	10	<1	1395	225	1097	1831	455	-	12	261	1076	99	2.5	193	8089
1980	2680	-	536	34	30	<1	1194	249	947	1830	664	-	17	360	1134	122	5.5	277	10080
1981	2437	-	1025	44	20	<1	1264	163	685	1656	463	-	26	493	1233	101	6	313	9929
1982	1798	-	865	54	20	<1	1077	147	993	1348	354	-	25	286	1092	132	6.4	437	8634
1983	1424	-	678	57	16	<1	310	198	1656	1550	507	3	28	429	1221	187	1.3	466	8731
1984	1112	-	628	44	25	<1	297	159	829	1623	593	3	40	345	1013	78	2.2	101	6892
1985	1133	-	566	49	22	7	864	217	1595	1561	659	3	45	361	913	98	2.1	-	8095
1986	1559	-	530	38	28	19	960	310	1730	1598	608	2.5	54	430	1271	109	1.9	-	9248
1987	1784	-	576	49	27	<1	966	222	1239	1385	564	2	47	302	922	56	1.2	-	8142
1988	1311	-	243	34	32	4	893	396	1874	1076	419	2	40	395	882	114	0.9	-	7716
1989	1139	-	364	52	14	<1	337	278	1079	905	359	2	29	296	895	142	1.7	-	5893
1990	911	13	315	59	15	<1	274	426	586	930	315	2	33	338	624	94	2.4	-	4937
1991	711	3.3	95	69	13	4	472	505	404	876	215	1	38	200	462	55	0.8	-	4124
1992	470	10	23	78	20	5	237	590	630	850	161	1.3	49	195	525	151	0.7		3996
5YM	1171	-	319	53	20	2	588	365	1036	1034	374	2	37	306	757	92	1	-	6162
10YM	1288	-	486	51	21	4	645	286	1199	1285	459	2	38	338	930	107	2	-	7241

5YM - 1987-1991 Mean

10YM - 1982-1991 Mean

1. Catch on River Foyle allocated 50% Ireland and 50% N. Ireland.
2. Not including angling catch (mainly 1SW).
3. Includes only those catches sold through dealers
4. Before 1966, sea trout and sea charr included (5% of total).
5. Includes estimates of some local sales, and, prior to 1984, by-catch.
6. Includes catches in Norwegian Sea by vessels from Denmark, Sewden, Germany, Norway and Finland

Figure 4.4.1.1. Counts of small and large salmon from fishways and counting fences in insular Newfoundland indicating 1992 returns as a percentage of 1984-89 mean.



ANNEX 4

NORTH AMERICAN COMMISSION

NAC(93)9

NAC SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

REPORT OF ACTIVITIES 1992/93

REPORT OF ACTIVITIES 1992/93

NAC Scientific Working Group on Salmonid Introductions and Transfers

MEMBERS:

Rex Porter (Canada Co-chair)
Tim Carey (Canada)
Richard Cutting (Canada)
Arthur Neill (USA Co-chair)
Ted Spurr (USA)

The Scientific Working Group dealt with two issues during the past year: i) publication of the protocols for the Introduction and Transfer of Salmonids in the NAC area; ii) up-date the inventory of introductions and transfers of salmonids in the NAC Area. Consultations and collaboration on these two issues were conducted by correspondence.

1) PUBLICATION OF PROTOCOLS FOR THE INTRODUCTION AND TRANSFER OF SALMONIDS

At the 1992 annual meeting, the NAC adopted the revised protocols tabled by the Working Group. Final editing was completed by the Working Group with assistance from the NASCO Secretariat. Two documents were published by NASCO. One incorporated the entire Protocols, including the three Subcommittee Reports; the second is a summary of the protocols in English and French versions. The complete protocol document has been distributed; and the summary is ready for distribution. **The Working Group gives its sincere thanks and appreciation to the NASCO Secretariat staff for their relentless effort in editing, typing, proof-reading, and publishing the documents. They did a superb job.**

2) INVENTORY OF INTRODUCTIONS AND TRANSFERS OF SALMONIDS IN THE NAC AREA

State and Provincial reports on 1992 salmonid introductions and transfers have been compiled and added to the Inventory. A copy of the current inventory is attached. Most of the recent introductions and transfers were for aquaculture, as in previous years. Sport fishing is the least frequent reason for moving fishes.

The reports submitted by the various agencies were reviewed by the Working Group, in relation to the NAC Protocols. Imports continue from west of the Continental Divide and from Sweden. The importations of rainbow trout from Utah (650,000), the State of Washington (70,000), and Sweden (115,000) are similar to those which occurred in 1991.

Of particular concern is the proposed continued importation of rainbow trout eggs from California by the New Jersey State Aquarium. There is a risk of transmitting diseases depending on the extent of screening for diseases prior to importation, the handling of mortalities and the sterilization of the effluent from the aquarium. If the aquarium is operated as a quarantine facility, then using the fish for display could be conducted with minimal risk of transmitting pathogens. However, feeding the mortalities or frozen juveniles to other fishes is not a good practice. It seems hardly worthwhile to use the dead fish for food considering the small volume of food involved and the associated risk of transmitting disease organisms.

The importation of Atlantic salmon from Australia into Maine is also of concern. The Atlantic salmon are River Philip, Nova Scotia, strain. Further information is required on the disease status of the source facility, and the disease diagnostics conducted, before the degree of risk of potential adverse effects can be determined.

It is recommended that the Fish Health Sub-group investigate the degree of risk associated with the transfers of fish from the sources shown in Table 1.

It is also recommended that the Fish Health Subgroup re-examine the ban on importation of salmonids from west of the Continental Divide. This ban was implemented to prevent the introduction of Infectious Hematopoietic Necrosis virus (IHN) to the Atlantic coast. However, eggs and juvenile fish have been imported to Canada from aquaculture facilities with a history of disease-free inspections, without problems of disease transfer. Also, widely-accepted protocols are available (eg. in the Great Lakes Basin) which minimize the risk of introducing IHN with salmonid eggs and fish imported from INH-enzootic regions.

The State of New Hampshire now has regulations banning the importation of fish from west of the Continental Divide and from Europe.

The NAC Protocols have not been in effect long enough to determine the extent that the various agencies will implement the Zone and River Classification System set out in the protocols.

Table 1. Summary of introductions and transfers of salmonids from Europe and from west of the Continental Divide, in 1992 and proposed for 1993.

Species	State/ Prov	Source	Life stage	Quantity	Comments
Rainbow trout	Maine	Sweden	eggs	115,000	Sport fishing
	Mass	Utah	eggs	650,000	Public fishing
	Ont	Wash	eggs	70,000	Private Sector
	N Jersey	Calif	eggs	40,000	State Aquarium Observation and fish food (proposed for 1993)
Atlantic salmon	Maine	Austral	eggs	750,000	Aquaculture

ABBREVIATIONS USED IN TABLES

Countries/Provinces/States

AK	ALASKA
BC	BRITISH COLUMBIA
CAN	CANADA
CA	CALIFORNIA
CO	COLORADO
CT	CONNECTICUT
FIN	FINLAND
ICE	ICELAND
ID	IDAHO
IN	INDIANA
LAB	LABRADOR
ME	MAINE
MAN	MANITOBA
MA	MASSACHUSETTS
MI	MICHIGAN
MT	MONTANA
NB	NEW BRUNSWICK
NFLD	NEWFOUNDLAND
NH	NEW HAMPSHIRE
NJ	NEW JERSEY
NOR	NORWAY
NY	NEW YORK
NS	NOVA SCOTIA
ONT	ONTARIO
OR	OREGON
PA	PENNSYLVANIA
PEI	PRINCE EDWARD ISLAND
QUE	QUEBEC
RI	RHODE ISLAND
SCO	SCOTLAND
SWE	SWEDEN
TN	TENNESSEE
US	UNITED STATES OF AMERICA
UT	UTAH
VT	VERMONT
WA	WASHINGTON
WV	WEST VIRGINIA
WY	WYOMING

Other Terms

ANAD	ANADROMOUS
ATL	ATLANTIC
AQC	AQUACULTURE
BOF	BAY OF FUNDY
BK	BROOK
CK	CREEK
CM	CENTIMETRE(S)
CNTR	CENTRE
DOM	DOMESTIC
E EGGS	EYED EGGS
ENV	ENVIRONMENT
EXP	EXPERIMENTAL/ RESEARCH
FCS	FISH CULTURE STATION
FF	FISH FARM
FING	FINGERLING(S)
G	GRAM
G EGGS	GREEN EGGS
H	HATCHERY
HARB	HARBOUR
IS	ISLAND
JUV	JUVENILE
LAB	LABORATORY
LK	LAKE
LL	LANDLOCKED
MO	MONTH
NW	NORTHWEST
P	PROPOSED
PS	PUBLIC STOCKING
P SMOLT	POST SMOLT
P/S	PARR/SMOLT TRANSITION
PYP	POST-YEARLING PARR
QUAR	QUARANTINE (FACILITY)
REV	REVISION
R	RIVER
RET	RETURN(ING)
SJR	SAINT JOHN RIVER
SKAM	SKAMANIA
SS	STEELHEAD STRAIN
SP	SPRING(S)
STR	STRAIN
TF	TROUT FARM
TR	TRIPLOID
U	UNIVERSITY
UNID	UNIDENTIFIED
UNK	UNKNOWN
UY PARR	UNDERYEARLING PARR
W	WILD
WS	WATERSHED
YEAR	YEARLING
*	REVISION

ABBREVIATIONS USED IN TABLES

Organizations

ASF	ATLANTIC SALMON FEDERATION
ASI	ATLANTIC SALMON (MAINE) INC
ASL	ATLANTIC SMOLTS LIMITED
ASRSC	ATLANTIC SEA-RUN SALMON COMMISSION
AVC	ATLANTIC VETERINARY COLLEGE
CDEP	CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEC	DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DFO	DEPARTMENT OF FISHERIES AND OCEANS (CANADA)
EPS	ENVIRONMENTAL PROTECTION SERVICE (CANADA)
FMS	FUNDY MARINE SURVEYORS
GNPDC	GREAT NORTHERN PENINSULA DEVELOPMENT CORPORATION
IAS	INTEGRATED AQUATIC SYSTEMS LIMITED
HML	HUNTSMAN MARINE LABORATORY
MDFW	MASSACHUSETTS DIVISION OF MARINE FISHERIES
MAPA	QUEBEC MINISTERE AGRICULTURE, PECHERIE, ALIMENTATION
MINL	MARINE INSTITUTE OF NEWFOUNDLAND AND LABRADOR
MMOP	MERI MER OCEAN PRODUCTS
MPL	MARICULTURE PRODUCTS LIMITED
MSRL	MARINE SCIENCES RESEARCH LABORATORY
NBNDRE	NEW BRUNSWICK DEPARTMENT OF NATURAL RESOURCES AND ENERGY
NBFWB	NEW BRUNSWICK FISH AND WILDLIFE BRANCH
NEFFI	NEW ENGLAND FISHING ENTERPRISES INC
NHFG	NEW HAMPSHIRE FISH AND GAME DEPARTMENT
NMFS	NATIONAL MARINE FISHERY SERVICE
NSDF	NOVA SCOTIA DEPARTMENT OF FISHERIES
NWAFC	NORTHWEST ATLANTIC FISHERIES CENTRE
NYDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OMNR	ONTARIO MINISTRY OF NATURAL RESOURCES
OPI	OCEAN PRODUCTS INCORPORATED
OSL	OCEAN SCIENCES LABORATORY, MEMORIAL UNIVERSITY
SMBDA	ST. MARY'S BAY DEVELOPMENT ASSOCIATION
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

CONNECTICUT

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS							FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
7001	MT, INNES HATCHERY (ERWIN)	1987	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				
8001	TN, ERWIN HATCHERY (ERWIN)	1988	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				HOUSATONIC RIVER
9001	MT, INNES HATCHERY (ERWIN)	1989	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				HOUSATONIC RIVER
0001	MT, INNES HATCHERY (ERWIN)	1990	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				HOUSATONIC RIVER
0002	MT, INNES HATCHERY (ERWIN)	P1991	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY	*			NOT YET RELEASED: 17/01/91
1001	MT, INNES NFH (ERWIN)	1990	15000	EGGS	CT, BURLINGTON SFH				
1002	MT, INNES NFH (ERWIN)	1991	15000	EGGS	CT, BURLINGTON SFH				HOUSATONIC RIVER
1003	MT, INNES NFH (ERWIN)	1992	15000	EGGS	CT, BURLINGTON SFH				NOT RELEASED YET 11/2/92
									NOT RELEASED YET 11/2/92
SALMO TRUTTA [BROWN TROUT]									
0003	NY, CATSKILL HATCHERY (SEEFORELLEN)	1990	20000	EGGS	CT, CDEP/BURLINGTON HATCHERY	*			
0004	NY, CATSKILL HATCHERY (SEEFORELLEN)	P1991	35000	EGGS	CT, CDEP/BURLINGTON HATCHERY				NOT YET RELEASED: 17/01/91
1004	NY, CATSKILL SFH (SEEFORELLEN)	1990	20000	EGGS	CT, BURLINGTON SFH				
1005	NY, CATSKILL SFH (SEEFORELLEN)	1991	35000	EGGS	CT, BURLINGTON SFH				SAUGATUCK RESERVOIR
1006	NY, CATSKILL SFH (SEEFORELLEN)	1992	35000	EGGS	CT, BURLINGTON SFH				NOT RELEASED YET 11/2/92
									NOT RELEASED YET 11/2/92

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

MAINE

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS KETA [CHUM SALMON]									
6001	WA, MINTER CREEK H (MINTER CR/WILD)	1986	500000	EGGS	ME, SEA RUN INC/DEAD RIVER H				CASCO BAY (SEA RANCHING)
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
9003	FIN, OY BALTIC (BALTIC/DONALDSON DOM)	1989	10000	EGGS	ME, PINE TREE TROUT				(STOCK ACCIDENTALLY KILLED)
9004	FIN, OY BALTIC (BALTIC/DONALDSON DOM)	1989	110000	EGGS	ME, MPL/BINGHAM HATCHERY	1990			
0012	ONT, RAINBOW SP H (DOMESTIC/STEVENSON)	1990	5000	EGGS	ME, PINE TREE TROUT/SANFORD				
0013	ONT, RAINBOW SP H (DOMESTIC/STEVENSON)	1990	15000	EGGS	ME, PIERCE ASSOCIATES/WEST BUXTON				
1002	SWE, ALVDALSLAX AB(OSTER/DONALDSON)	1991	240000	EGGS	ME, MPL/BINGHAM HAT	1991	50000	F FING	FRENCHBORO (CAGE CULTURE)
1002						1992	125000	SP YEAR	SWANS IS (CAGE CULTURE)
1003	SWE, ALVDALSLAX AB(OSTER/DONALDSON)	1991	75000	EGGS	ME, PENOBSCOT SALMON FRANKLIN	1992	60000	1+	PREBLE IS (CAGE CULTURE)
1004	SWE, ALVDALSLAX AB(OSTER/DONALDSON)	1991	50000	EGGS	ME, SEA RUN HOLDINGS DEAD RIVER H	1992	500	SMOLT1+	NESC, GOVE PT (CAGE CULTURE)
1004		1992	15000	1+	GARY SMALL, BIRCH POINT (CAGE CULTURE)				
1004		1992	30000	1+	NELLIE B FISH INC, LUBEC (CAGE CULTURE)				
1004		1992	10000	1+	MAINE SALMON, COBSCOOK (CAGE CULTURE)				
1004		1992	7700	1+	FRIENDSHIP ENT, EASTPORT (CAGE CULTURE)				
1009	ONT, RAINBOW SP H (STEVENSON)	1991	15000	EGGS	ME, PIERCE ASSO W BUXTON	P			
1010	ONT, RAINBOW SP H (STEVENSON)	1991	10000	EGGS	ME, PIERCE ASSP W BUXTON	P			
1011	ONT, RAINBOW SP H (STEVENSON)	1991	30000	EGGS	ME, ROMMY HAINES JR FORT FAIRFIELD				
1012	ONT, RAINBOW SP H (STEVENSON)	1991	10000	EGGS	ME, ROMMY HAINES JR FORT FAIRFIELD				
2093	ONT, RAINBOW SP H (STEVENSON)	1992	5000	EGGS	ME, PINE TREE TROUT/SANFORD	P			
2094	ONT, RAINBOW SP H (STEVENSON)	1992	35000	EGGS	ME, PIERCE ASSO W BUXTON	P			
2095	SWE, ALVDALSLAX AB(OSTER/DONALDSON)	1992	115000	EGGS	ME, PENOBSCOT SALMON FRANKLIN	1992	17500	F FING	MR (SPORT FISHERY)
2096	ONT, RAINBOW SP H (STEVENSON)	1992	15000	EGGS	ME, ROMMY HAINES JR FORT FAIRFIELD	P			
SALMO SALAR [ATLANTIC SALMON]									
6005	NB, SEA FARMS H (SAINT JOHN RIVER)	1986	25000	SMOLTS	ME, OCEAN PRODUCTS INCORPORATED				EASTPORT CAGES (AQC)
6004	SCO, ALLT MOR H (ARAY RIVER/WILD)	1986	50000	EGGS	ME, SEA RUN INC/DEAD RIVER H	P			
6003	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	1986	106000	EGGS	ME, ASRSC/GREEN LAKE HATCHERY	P			AROOSTOOK R (RESTORATION)
6002	NB, MACTAQUAC FCS ? (SAINT JOHN R)	1986	200	ADULTS	ME, ASRSC				AROOSTOOK R (RESTORATION)
7002	NB, FLORENCEVILLE H (SJR/MINTO)	1987	40000	UY PARR	ME, SALEN INCORPORATED				UPPER SJR (ENHANCEMENT)
7004	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	1987	55	GRILSE	ME, ASRSC				AROOSTOOK R (RESTORATION)
7007	SCO, WESTER ROSS H (DOMESTIC)	1987	500000	EGGS	ME, ASI/OQUOSSOC H (REARING)	1989	25000	SMOLTS	CROSS IS (AQUACULTURE)
7006	NB, SEA FARMS (AQC BROODSTOCK)	1987	25000	SMOLTS	ME, OCEAN PRODUCTS INCORPORATED				EASTPORT CAGES (AQC)
7001	FIN, OY BALTIC (DOMESTIC SEA CAGES)	1987	500000	EGGS	ME, OPI/DEBLOIS HATCHERY	1988	27000	SMOLTS	SEE NEXT LINE
7001					ME, OPI/GARDINER LAKE H	1989	22000	SMOLTS	BROAD COVE (AQUACULTURE)
7005	NB, SEA FARMS (AQC BROODSTOCK)	1987	18000	SMOLTS	ME, FRANK RIER				LUBEC CAGES (AQC)
7008	NB, JAIL IS SALMON (FUNDY/SAINT JOHN)	1987	1000000	EGGS	NB, SEA FARMS/OROMOCTO H	1989	30000	SMOLTS	JOHNSON BAY (AQUACULTURE)
7003	NB, FLORENCEVILLE H (SAINT JOHN R)	1987	150000	FRY	ME, ASRSC				UPPER SJR (ENHANCEMENT)
8001	ICE, ELDI FISH FARMS (AQC BROODSTOCK)	1988	156000	EGGS	ME, MPL/BINGHAM HATCHERY	P1989			(AQUACULTURE)
8012	ICE, ELDI FISH FARMS	1988	500000	EGGS	ME, MPL/BINGHAM HATCHERY	1989	3000	SMOLTS	ALLEN IS (AQUACULTURE)
8012		1989	100000	SMOLTS	SWANS IS (AQUACULTURE)				
8012		1989	80000	SMOLTS	LUBEC (AQUACULTURE)				
8012		1989	20000	SMOLTS	TREAT IS (AQUACULTURE)				
8013	ICE, ISNO SEA CAGES (AQC BROODSTOCK)	1988	280000	EGGS	ME, MPL/BINGHAM HATCHERY	1989	15000	SMOLTS	MATHEWS IS (AQUACULTURE)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALMO SALAR [ATLANTIC SALMON] (continued)									
8013						1989	60000	SMOLTS	SWANS IS (AQUACULTURE)
8013						1989	80000	SMOLTS	LUBEC (AQUACULTURE)
8013						1989	20000	SMOLTS	TREAT IS (AQUACULTURE)
8014	FIN, OY BALTIC (MOORUM)	1988	1000000	EGGS	ME, MPL/BINGHAM HATCHERY	1989	100000	SMOLTS	SWANS IS (AQUACULTURE)
8014						1989	80000	SMOLTS	COOPER IS (AQUACULTURE)
8014						1989	30000	SMOLTS	TREAT IS (AQUACULTURE)
8004	SCO, LANDCATCH (AQC/2 NORWAY STRAINS)	1988	1000000	EGGS	ME, ASI/OQUOSSOC HATCHERY	P1989			(AQUACULTURE)
8004	SCO, LANDCATCH (AQC/2 NORWAY STRAINS)	1988	1000000	EGGS	ME, ASI/OQUOSSOC HATCHERY	P1989			(AQUACULTURE)
8004	SCO, LANDCATCH (DOMESTIC)	1988	1500000	EGGS	ME, ASI/OQUOSSOC HATCHERY	1989	20000	SMOLTS	GR WASS IS (AQUACULTURE)
8004						1989	80000	SMOLTS	TREAT IS (AQUACULTURE)
8004						1989	80000	SMOLTS	ROGERS IS (AQUACULTURE)
8004		1989	5000	SMOLTS	MATHEWS IS (AQUACULTURE)				
8004						1989	35000	SMOLTS	TREAT IS (AQUACULTURE)
8004						1989	225000	SMOLTS	CROSS IS (AQUACULTURE)
8017	NB, JAIL IS SALMON (FUNDY/SAINT JOHN)	1988	1600000	EGGS	NB, SEA FARMS/DIG & SPRING H	1988	200000	FRY	(SEE NEXT LINE)
8017					NH, BRISTOL HATCHERY	1989	90000	SMOLTS	CUTLER HARB (AQUACULTURE)
8017						1989	60000	SMOLTS	GR WASS IS (AQUACULTURE)
8015		1988	1500000	EGGS	NB, SEA FARMS/DIG & SPRING H	1988	200000	FRY	(SEE NEXT LINE)
8015					NH, BRISTOL HATCHERY	1989	10000	SMOLTS	GROVE PT (AQUACULTURE)
8016		1988	1000000	EGGS	NB, SEA FARMS/DIGDEQUASH H	1989	100000	SMOLTS	LUBEC (AQUACULTURE)
8016						1989	20000	SMOLTS	ROGERS IS (AQUACULTURE)
8016						1989	20000	SMOLTS	GROVE PT (AQUACULTURE)
8005	NB, DIGDEQUASH H (AQC/SAINT JOHN)	1988	30000	SMOLTS	NB, J STEVENS/LK UTOPIA H				LUBEC SEA CAGES (AQC)
8006	NB, DIGDEQUASH H (AQC/SAINT JOHN)	1988	99300	SMOLTS	ME, SEA FARMS				LUBEC SEA CAGES (AQC)
8007	NB, DIGDEQUASH H (AQC/SAINT JOHN)	1988	350000	UY PARR	ME, SALEN INCORPORATED				UPPER SJR (ENHANCEMENT)
8008	NB, FLORENCEVILLE H (SJR/MINTO & ASF)	1988	20000	UY PARR	ME, SALEN INCORPORATED				UPPER SJR (ENHANCEMENT)
8009	NB, FLORENCEVILLE H (SJR & MINTO)	1988	27000	FRY	ME, SALEN INCORPORATED				UPPER SJR (ENHANCEMENT)
8010	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	1988	100	ADULTS	ME, ASRSC				AROOSTOOK R (RESTORATION)
8011	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	1988	100000	EGGS	ME, ASRSC/GREEN LK H (HATCHING)	1988		FRY	AROOSTOOK R (RESTORATION)
9001	NB, FLORENCEVILLE H (DOMESTIC/SJR)	1989	30000	PARR	ME, SALEN INCORPORATED				SJR (ENHANCEMENT)
9002	NB, FLORENCEVILLE H (DOMESTIC/SJR)	1989	80000	FRY	ME, SALEN INCORPORATED				SJR (ENHANCEMENT)
9005	NB, SAINT JOHN FCS (SAINT JOHN)	1989	10000	SMOLTS	ME, DFO				AROOSTOOK R (SURVIVAL TEST)
9007	NB, SEA FARMS CANADA (ATLANTIC/SJR)	1989	627000	EGGS	ME, OPI/GARDNER LAKE				(NOT SPECIFIED)
9008	NB, GRANGER COVE SALMON (ATL/SJR)	1989	225000	EGGS	ME, OPI/GARDNER LAKE				(NOT SPECIFIED)
9009	NB, GRANGER COVE SALMON (ATL/SJR)	1989	250000	EGGS	ME, ASI/OQUOSSOC HATCHERY				(NOT SPECIFIED)
9010	NB, KELLY COVE SALMON (ATLANTIC/SJR)	1989	550000	EGGS	ME, MPL/BINGHAM HATCHERY				(NOT SPECIFIED)
9011	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	550000	EGGS	ME, MPL/BINGHAM HATCHERY				(NOT SPECIFIED)
9012	NB, KELLY COVE SALMON (ATLANTIC/SJ)	1989	187500	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9013	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	187500	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9014	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	250000	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9015	NB, KELLY COVE SALMON (ATLANTIC/SJ)	1989	250000	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9016	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	125000	EGGS	ME, ASI/OQUOSSOC HATCHERY				(NOT SPECIFIED)
9017	NB, KELLY COVE SALMON (ATLANTIC/SJ)	1989	125000	EGGS	ME, ASI/OQUOSSOC HATCHERY				(NOT SPECIFIED)
9018	NB, CONNORS BROS (ATLANTIC/SJ)	*1989	200000	EGGS	ME, PICARD FARMS/FRENCHVILLE	1991	80000	SMOLT	PRINCE COVE (CAGE CULTURE)
0001	NB, SAINT JOHN FCS (SJR WILD)	1990	40000	FRY	ME, ASRSC (PUBLIC STOCKING)				WASHBURN, AROOSTOOK RIVER
0002	NB, SAINT JOHN FCS (SJR WILD)	1990	7569	SMOLTS	NB, DFO (PUBLIC STOCKING/RESEARCH)				PRESQUE ISLE, AROOSTOOK R

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
0003	NB, SAINT JOHN FCS (SJR WILD)	1990	6164	SMOLTS	NB, DFO (PUBLIC STOCKING/RESEARCH)				VAN BRUEN, SAINT JOHN RIVER
0004	SCO, LANDCATCH (AQUACULTURE/DOMESTIC)	*1990	1216804	EGGS	ME, ASI/OQUOSSOC HATCHERY	1991	100000	SMOLT	EASTPORT (CAGE CULTURE)
0004						1991	750000	SMOLT	CROSS ISLAND (CAGE CULTURE)
0005	NB, AQUA VENTURES (ATLANTIC/SJR)	1990	299830	EGGS	ME, KENNEBEC AQUACULTURE/EMBDEN				
0006	NB, KELLY COVE SALMON (ATLANTIC/SJR)	1990	140500	EGGS	ME, PENOBSCOT SALMON COMPANY INC	1990	5000	SMOLT	FRENCHMANS BAY (CAGE CULTURE)
	SEE 0005 & 0006 COMBINED	1990			AQUA VENTURE/KELLY COVE	1990	370000	EGGS	KENNEBEC AQUACULTURE EMBDEN
0006						1990	88000	YEAR	PENOBSCOT(FRANKLIN H)
0006						1991	30000	SMOLT	FRENCHMANS BAY(CAGE CULTURE)
0007	NB, GRANGER COVE SALMON (ATL/SJR)	1990	178640	EGGS	ME, ASI/OQUOSSOC HATCHERY				
0008	NB, AQUA VENTURES (ATLANTIC/SJR)	1990	230782	EGGS	ME, ASI/OQUOSSOC HATCHERY				
0009	NB, KELLY COVE SALMON (ATLANTIC/SJR)	*1990	274890	EGGS	ME, MPL/BINGHAM HATCHERY	1991	164936	SMOLT	SWANS ISLAND (CAGE CULTURE)
1001	NB, DIGDEQUASH HAT (ATL OCEAN ST JOHN)	U/K	U/K	U/K	U/K	1991	122000	SMOLT	LUBEC (CAGE CULTURE)
1005	NB, GRANGER COVE SALMON (DOMESTIC)	1991	450000	EGGS	ME, RANGLEY HATCHERY	1992	450000	S1	ASI, CROSS IS (CAGE CULTURE)
1006	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	1195789	EGGS	ME, KENNEBEC AQUACULTURE/EMBDEN	1992	35000	FRY	PENOBSCOT(FRANKLIN H)
1006						1992	48000	FING	PENOBSCOT(FRANKLIN H)
1006						1992	158000	EGGS	ASI/RANGELY HATCHERY
1007	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	150000	EGGS	ME, PENOBSCOT SALMON FRANKLIN				
1008	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	200000	EGGS	ME, ASI/RANGELEY HAT	P			
1013	NB, SEA FARMS FRYE ISLAND (ATL ST J)	1991	450000	EGGS	ME, ASI/RANGELEY HAT	1992	450000	S1	ASI, CROSS IS (CAGE CULTURE)
1014	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	300000	EGGS	ME, ASI/RANGELEY HATCHERY	P			
1015	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	576163	EGGS	ME, KENNEBEC AQUACULTURE/EMBDEN	1992	15000	S1	ASI, CROSS IS (CAGE CULTURE)
1015		1992	25000	S1	TREATS IS (CAGE CULTURE				
1015		1992	15000	S1	ASI, CROSS ISLAND (CAGE CULTURE)				
1015		1992	80000	S1	MCN, CUTLER HARB (CAGE CULTURE)				
1016	NB, GRANGER COVE SALMON (ATL ST JOHN)	1991	170000	EGGS	ME, PENOBSCOT SALMON FRANKLIN	1992	150000	SMOLT	PREBLE IS (CAGE CULTURE)
1017	NB, GRANGER COVE SALMON (ATL ST JOHN)	1991	300000	EGGS	ME, PICARD HATCHERY FRENCHVILLE	1992	15000	S1	MPS, PRINCE COVE (CAGE CULTURE)
1017		1992	85000	SMOLT	MPS, COOPER IS (GAGE CULTURE)				
1017		1992	45000	S1	MPS, COOPER IS (CAGE CULTURE)				
1017		1992	30000	SMOLT	MPS, PRINCE COVE (CAGE CULTURE)				
1018	NB, GRANGER COVE SALMON (ATL ST JOHN)	1991	315000	EGGS	ME, ASI/RANGELEY HATCHERY	1992	315000	S1	ASI, CROSS ISLAND (CAGE CULTURE)
1019	NB, KELLY COVE SALMON (ATL ST JOHN)	1991	420000	EGGS	ME, MARICULTURE PRO BINGHAM H				
2088	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1992	175000	EGGS	ME, PENOBSCOT SALMON FRANKLIN				
2089	NB, GRANGER COVE SALMON (ATL ST JOHN)	1992	792000	EGGS	ME, ASI/RANGELEY HATCHERY				
2090	AUS, PURVES FISHERIES (RIVER PHILIP,NS)	1992	750000	EGGS	ME, MAINE PRIDE SALMON/PICARD H				
2091	NB, SEA FARMS DIGDEGUASH (ATL ST JOHN)	1992	40000	S1	ME, TREATS ISLAND FISHERIES	1992	40000	S1	TREATS ISLAND (CAGE CULTURE)
2091			25000	S2	ME, TREATS ISLAND FISHERIES	1992	25000	S2	TREATS ISLAND (CAGE CULTURE)
2092	NB, SEA FARMS DIGDEGUASH (ATL ST JOHN)	1992	110000	S1	ME, SEA FARM MAINE INC	1992	110000	S1	JOHNSON BAY (CAGE CULTURE)
2092			50000	S2	ME, SEA FARM MAINE INC	1992	50000	S2	JOHNSON BAY (CAGE CULTURE)
SALVELINUS ALPINUS [ARCTIC CHAR]									
9006	NB, HML (HML/FRASER R, LABRADOR)	1989	20000	EGGS	ME, MPL/BINGHAM HATCHERY	P1990			(NOT SPECIFIED)
SALVELINUS FONTINALIS [BROOK TROUT]									
0010	CO, 4 SEASONS TF (WILDCAT RESERVOIR)	1990	20000	EGGS	ME, PIERCE ASSOCIATES/WEST BUXTON				
0011	UT, EGAN HATCHERY (EGAN H/OWHI)	1990	145327	EGGS	ME, MDIFW/COBB STATE HATCHERY	1990	112019	FING	VARIOUS (PUBLIC STOCKING)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

MASSACHUSETTS

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS SPONSOR/FACILITY (PURPOSE)				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE		YEAR	NUMBER	STAGE	
ONCORHYNCHUS KISUTCH [COHO SALMON]									
6003	OR, ORE AQUA INC (UNKNOWN)	1986	25000	EGGS	MA, SP INC/SALEM LABORATORY				SALEM LAB TANKS (AQC)
6001	MA, SULLIVAN & SANDWICH H (NORTH R/WA)	1986	24942	SMOLT	NORTH RIVER (RESEARCH)				
7001	OR, ORE AQUA INC (UNKNOWN)	1987	35000	EGGS	MA, R T CAPELESS				HINSDALE TANKS (AQU)
8002	MI, PLATTE RIVER HATCHERY				MA, SULLIVAN HATCHERY	1988	30000	JUV	NORTH RIVER (RESEARCH)
8001	MA, (NORTH RIVER)				MA, SULLIVAN HATCHERY	1988	21000	JUV	NORTH RIVER (RESEARCH)
9001	MI, PLATTE RIVER HATCHERY	*			MA, SULLIVAN HATCHERY	1989	50000		NORTH RIVER (RESEARCH)
9002	NY, SALMON RIVER HATCHERY	*			MA, SULLIVAN HATCHERY	1989	50000		NORTH RIVER (RESEARCH)
1004	NY, AQUA ARBOR(Hinchinbrooke)	1991	10000	EGGS	MA, MDFW/BANCROFT MILL FARM				RESEARCH/FOOD PRO
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
6004	WA, TROUT LODGE (UNKNOWN)	1986	50000	EGGS	MA, MOHAWK TROUT HATCHERY				SUTHERLAND PONDS (AQC)
9005	WA, TROUT LODGE (DOMESTIC)	1989	550000	EGGS	MA, MCLAUGHLIN HATCHERY	1990	100000	FRY	SEE NEXT LINE
9005					SANDWICH HATCHERY	*1991		1+	(PUBLIC FISHING)
9005					MA, MCLAUGHLIN HATCHERY	1990	75000	FRY	SEE NEXT LINE
9005					SUNDERLAND HATCHERY	*1991		1+	(PUBLIC FISHING)
9005					MA, MCLAUGHLIN HATCHERY	1990	75000	FRY	SEE NEXT LINE
9005					MONTAGUE HATCHERY	*1991		1+	(PUBLIC FISHING)
9006	ID, BLACK CANYON TF (DOMESTIC)	1989	30000	EGGS	MA, MCLAUGHLIN HATCHERY	*1991		1+	(PUBLIC FISHING)
0001	ONT, AQUAFARMS CANADA (DOMESTIC)	1990	20000	EGGS	MA, D J ADAMS HATCHERY				(PRIVATE AQUACULTURE)
0002	UT, TROPHY FISH RANCH INC (DOMESTIC)	1990	500000	G EGGS	MA, MDFW/MCLAUGHLIN HATCHERY	1991	80000	FRY	SEE NEXT 2 LINES
0002					SUNDERLAND HATCHERY	*1991			VARIOUS (PUBLIC FISHING)
0002					SUNDERLAND HATCHERY	*1992			VARIOUS (PUBLIC FISHING)
0002					MA, MDFW/MCLAUGHLIN HATCHERY	1991	80000	FRY	SEE NEXT 2 LINES
0002					MONTAGUE HATCHERY	*1991			VARIOUS (PUBLIC FISHING)
0002					MONTAGUE HATCHERY	*1992			VARIOUS (PUBLIC FISHING)
0003	UT, TROPHY FISH RANCH INC (DOMESTIC)	1990	100000	G EGGS	MA, MDFW/SANDWICH HATCHERY	*1991			VARIOUS (PUBLIC FISHING)
0003					MA, MDFW/SANDWICH HATCHERY	*1992			VARIOUS (PUBLIC FISHING)
0004	ONT, AQUAFARMS CANADA (DOMESTIC)	1990	7000	FING	MA, MDFW/PLYMOUTH ROCK TROUT CO.				UNKNOWN
0005	ONT, RAINBOW SPRINGS H (DOMESTIC)	1990	60000	E EGGS	MA, MDFW/PLYMOUTH ROCK TROUT CO.				UNKNOWN
0006	ONT, WILDCAT TROUT FARM (DOMESTIC)	1990	100000	E EGGS	MA, MDFW/PLYMOUTH ROCK TROUT CO.				UNKNOWN
1001	UT, TROPHY FISH RANCH INC(DOMESTIC)	1991	600000	FRY	MA, MDFW/McLAUGHLIN HATCHERY	*1992	270000	FRY	SEE NEXT 3 LINES
1001		1992	100000	FRY	SANDWICH STATE HATCHERY	P1993			(PUBLIC FISHING)
1001		1992	80000	FRY	SUNDERLAND STATE HATCH	P1993			(PUBLIC FISHING)
1001		1992	90000	FRY	MONTAGUE STATE HATCH	P1993			(PUBLIC FISHING)
1005	MT, SPRING CREEK HAT(DOMESTIC)	1991	10000	FRY	MA, MDFW/GAUTHIER TROUT FARM				PRIVATE SECTOR DOMAIN
2097	UT, TROPHY FISH RANCH INC(DOMESTIC)	1992	650000	EGGS	MA, MDFW/McLAUGHLIN HATCHERY	1993	270000	FRY	SEE NEXT 3 LINES
2097		1993	100000	FRY	SANDWICH HATCHERY	P1994			(PUBLIC FISHING)
2097		1993	80000	FRY	SUNDERLAND STATE HATCHERY	P1994			(PUBLIC FISHING)
2097		1993	90000	FRY	MONTAGUE STATE HATCHERY	P1994			(PUBLIC FISHING)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS KAMLOOPS [KAMLOOPS TROUT]									
6002	WA, TROUT LODGE (UNKNOWN)	1986	10000	EGGS	MA, CANDEES TROUT HATCHERY				EGERMONT PONDS (AQC)
SALMO SALAR [ATLANTIC SALMON]									
8003	ME, (UNION RIVER)				MA, MDFW/REED HATCHERY	1988	6033	FRY	WESTFIELD RIVER
8003						1988	27467	FRY	MANHAN RIVER
8003						1988	14969	FRY	BEAR RIVER
8003						1988	23430	FRY	COLD RIVER
8003						1988	12000	FRY	SOUTH RIVER
8004	ME, (UNION RIVER)				MA, MDFW/REED HATCHERY	1988	22600	SMOLTS	DEERFIELD RIVER
8004						1988	22800	SMOLTS	MILLERS RIVER
8005	ME, (UNION RIVER)				MA, MDFW/REED HATCHERY	1988	2700	PARR	MILLERS RIVER
8005						1988	2300	PARR	DEERFIELD RIVER
9003	CT, (CONNECTICUT RIVER)				MA, MDFW/REED HATCHERY	1989	120000	FRY	DEERFIELD RIVER
9004	CT, (CONNECTICUT RIVER)				MA, MDFW/REED HATCHERY	1989	20000	SMOLTS	DEERFIELD RIVER
9004						1989	20000	SMOLTS	MILLERS RIVER
SALMO TRUTTA(BROWN TROUT)									
1002	MT, SPRING CREEK H (DOMESTIC)	1991	100000	EGGS	MA, MDFW/TROUT FARM WAREHAM				PRIVATE SECTOR DOMAIN
2098	MT, SPRING CREEK H (DOMESTIC)	1992	200000	EGGS	MA, MDFW/McLAUGHLIN H	1993	80000	FRY	SEE NEXT TWO LINES
2098		1993	40000	FRY	SUNDERLAND STATE H	P1994			(PUBLIC FISHING)
2098		1993	40000	FRY	MONTAGUE STATE H	P1994			(PUBLIC FISHING)
SALVELINUS FONTINALIS(BROOK TROUT)									
1003	MT, SPRING CREEK HAT (DOMESTIC)	1991	100000	EGGS	MA, MDFW/TROUT FARM WAREHAM				PRIVATE SECTOR DOMAIN
1006	NB, GREENACES TROUT H (PIS ALLEGHANYS)	U/K	50000	EGGS	MA, MDFW/RED WING MEADOW FARM				PRIVATE SECTOR DOMAIN

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

NEW BRUNSWICK

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
7007	ONT, RAINBOW SPRINGS HATCHERY	1987	2000	EGGS	NB, ST ANDREWS BIOLOGICAL STATION				
7015	QUE, PISCICULTURE ALLEGHANYS	1987	3000	FING	NB, D WOLVERTON				CENTERVILLE (AQUACULTURE)
7016	ONT, RAINBOW SPRINGS HATCHERY	1987	4000	FING	NB, A PHILLIPS				MONCTON (AQUACULTURE)
7010	PEI, INTEGRATED AQUATICS	1987	4000	FING	NB, DON CHAPMAN				CAMPOBELLO (AQUACULTURE)
7008	WA, BEITEYS RESORT	1987	75000	EGGS	NB, PURTILL HATCHERY				SUSSEX (AQUACULTURE)
7002	ONT, AQUAFARMS CANADA LTD	1987	15000	FING	NB, FUNDY MARINE SURVEYERS				SAINT JOHN (AQUACULTURE)
7014	QUE, PISCICULTURE ALLEGHANYS	1987	1300	FING	NB, G CORMIER				GRAND FALLS (AQUACULTURE)
7013	PEI, INTEGRATED AQUATICS	1987	3600	FING	NB, MERI-MER OCEAN PRODUCTS				WELSHPOOL (AQUACULTURE)
7012	QUE, PISCICULTURE ALLEGHANYS	1987	6000	FING	NB, ATLANTIS SEA FARMS				CLIFTON ROYAL (AQUACULTURE)
7011	QUE, PISCICULTURE ALLEGHANYS	1987	200000	EGGS	NB, ATLANTIS SEA FARMS				CLIFTON ROYAL (AQUACULTURE)
7003	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	EGGS	NB, PURTILL HATCHERY				SUSSEX (AQUACULTURE)
7017	ONT, AQUAFARMS CANADA LTD	1987	100000	EGGS	NB, ALVIN CRAFT/HATFIELD POINT				HATFIELD PT (AQUACULTURE)
7005	ONT, RAINBOW SPRINGS HATCHERY	1987	40000	EGGS	NB, OAK BAY HATCHERY				ST STEPHEN (AQUACULTURE)
7009	PEI, INTEGRATED AQUATICS	1987	3000	FING	NB, LLOYD COOK				ST GEORGE (AQUACULTURE)
7001	ONT, RAINBOW SPRINGS HATCHERY	1987	177000	EGGS	NB, ATLANTIC SEA FARM				CLIFTON ROYAL (AQC)
7018	ONT, AQUAFARMS CANADA LTD	1987	20000	EGGS	NB, MEADOW LAKE FARMS				SAINT JOHN (AQUACULTURE)
7004	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	EGGS	NB, ATLANTIC SMOLTS LTD				MINTO (AQUACULTURE)
7006	ONT, RAINBOW SPRINGS HATCHERY	1987	20000	EGGS	NB, SISCOR CORPORATION				MONCTON (AQUACULTURE)
8024	ONT, RAINBOW SPRINGS HATCHERY	1988	10000	FING	NB, WILLIAM KNOW (REARING)				SAINT JOHN (AQUACULTURE)
8023	QUE, PISCICULTURE ALLEGHANYS	1988	800	FING	NB, GILLES CORMIER (REARING)				GRAND FALLS (AQUACULTURE)
8022	PEI, INTEGRATED AQUATICS	1988	4300	FING	NB, L COOK, ST GEORGE (REARING)				BOF CAGES (AQUACULTURE)
8021	QUE, PISCICULTURE ALLEGHANYS	1988	100000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
8020	WA, BEITEYS RESORT	1988	125000	EGGS	NB, EDWARD EUSTACE (REARING)				SUSSEX (AQUACULTURE)
9004	PEI, BROOKVALLEY MARINE	1989	4350	EGGS	NB, MASCARINE MARICULTURE				MASCARINE (AQC) ?
9005	ONT, RAINBOW SPRINGS HATCHERY	1989	100000	EGGS	NB, MEDARD CORMIER, MONCTON				
9006	PEI, GLYNDE RIVER AQUACULTURE	1989	20000	EGGS	NB, B GATES/BELLEISLE CREEK				
9013	ONT, AQUAFARMS CANADA LTD	1989	75000	EGGS	NB, ALVIN CRAFT/HATFIELD POINT				
0001	PEI, INTEGRATED AQUATICS	1990	5000	EGGS	NB, NB COMMUNITY COLLEGE/ST.ANDREWS				
0002	PEI, BROOKVALLEY MARINE	1990	1900	FING	NB, M.LEGERE/FORTUNE				
0003	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	EGGS	NB, MEDARD CORMIER/MONCTON				
0004	QUE, PISCICULTURE ALLEGHANYS	1990	600	FING	NB, MICHEL BIRON/FREDERICTON				
0005	ONT, RAINBOW SPRINGS HATCHERY	1990	2000	FING	NB, POLLUTECH ENVIRONMENT/BATHURST				
1013	ONT, RAINBOW SPRINGS HATCHERY	1991	1000	FING	NB, POLLUTECH/CARAQUET				
1014	QUE, PISCICULTURE ALLEGHANYS	1991	20000	EGGS	NB, GREENACRES FARM/GRAND DIGUE				
1015	QUE, PISCICULTURE ALLEGHANYS	1991	20000	FING	NB, MEDARD CORMIER/MONCTON				
1016	PEI, BROOK VALLEY MARINE	1991	10000	FING	NB, LEGERE FARM/ROBICHAUD				
1017	PEI, DOVER HAT,MURRAY RIVER	1991	500	FING	NB, WOLVERTON HAT/CENTREVILLE				
1018	PEI, BROOK VALLEY MARINE	1991	6000	FING	NB, LEGERE FARM/ROBICHAUD				
1019	ONT, RAINBOW SPRINGS H,THAMESFORD	1991	1000	FING	NB, DEWINK IND/CARAQUET				
1020	PEI, BROOK VALLEY MARINE	1991	1800	FING	NB, LEGERE FARMS/ROBICHAUD				
1021	QUE, PISCICULTURE ALLEGHANYS	1991	40000	EGGS	NB, ALVIN CRAFT/HATFIELD PT				
1022	QUE, PISCICULTURE ALLEGHANYS	1991	80000	EGGS	NB, ALVIN CRAFT/HATFIELD PT				
1023	QUE, PISCICULTURE ALLEGHANYS	1991	200000	EGGS	NB, CLAUDE NADEAU/EDMUNSTON				
1026	QUE, PISCICULTURE ALLEGHANYS	1991	20000	EGGS	NB, GREENACRES H/GRAND DIGUE				
2026	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	1000	FISH	NB, DEWINK IND/CARAQUET				
2027	MAN, ROCKWOOD AQUACULTURE	1992	12000	EGGS	NB, UNB/DR BENFEY/FREDERICTON				
2028	ONT, AQUAFARMS CANADA LTD	1992	50000	EGGS	NB, EDWARD GATES/DELISLE CREEK				

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT] (continued)									
2031	QUE, PISCICULTURE ALLEGHANYS	1992	10000	EGGS	NB, EDWARD GATES/DELISLE CREEK				
2035	QUE, PISCICULTURE ALLEGHANYS	1992	50000	EGGS	NB, ALVIN CRAFT/HATFIELD POINT				
2037	QUE, PISCICULTURE ALLEGHANYS	1992	25000	EGGS	NB, LEGER FISH FARM/ROBICHAUD				
2038	PEI, BROOK VALLEY MARINE	1992	25000	EGGS	NB, JARVIS DUCEY/HATFIELD POINT				
2041	QUE, PISCICULTURE ALLEGHANYS	1992	50000	EGGS	NB, WOLVERTON MOUNTAIN FF/CENTREVILLE				STERILE FEMALES
2043	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	1000	FISH	NB, DEWINK IND/CARAQUET				
SALMO SALAR [LANDLOCKED ATLANTIC SALMON]									
8019	ME, GRAND LK STREAM H (WEST GRAND LK)	1988	35000	EGGS	NB, DFO/ST JOHN FCS (REARING)	P			(ENHANCEMENT)
9001	ME, GRAND LAKE STREAM HATCHERY	1989	35000	EGGS	NB, DFO/SAINT JOHN FCS				
SALMO TRUTTA [BROWN TROUT]									
7022	NB, FLOWERS COVE H (LOCH LOMOND)	1987	10000	JUV	NB, NBDNRE				EAST MUSQUASH R
8005	NB, FLOWERS COVE H (LOCH LOMOND)	P1988	10000	JUV	NB, NBDNRE				EAST MUSQUASH R
SALVELINUS ALPINUS [ARCTIC CHAR]									
8006	MAN, ROCKWOOD H (FRASER R, LABRADOR)	1988	3000	EGGS	NB, BOUCTOUCHE INDIAN BAND				BUCTOUCHE (AQUACULTURE)
	NB, FLOWERS COVE H (WALTON LAKE)	*1989	1000	JUV	SECOND KEDRON LAKE				
9002	MAN, ROCKWOOD HATCHERY	1989	5000	EGGS	NB, GREEN ACRES TROUT FARM/MONCTON				BUCTOUCHE (AQC) ?
9003	MAN, ROCKWOOD HATCHERY	1989	5000	EGGS	NB, BOUCTOUCHE INDIAN BAND				
9012	MAN, ROCKWOOD HATCHERY	1989	3000	EGGS	NB, SEA FARMS CANADA/SUSSEX				
0006	PEI, BROOKVALLEY MARINE	1990	40000	EGGS	NB, GREEN ACRES TROUT FARM/MONCTON				
1024	PEI, INTEGRATED AQUA	1991	4500	FRY	NB, HUNTSMAN MARINE LAB/ST ANDREWS				
1025	PEI, INTEGRATED AQUA	1991	10000	FING	NB, ROGER GIONET/SHIPPEGAN				
2062	MAN, ROCKWOOD HATCHERY	1992	45000	EGGS	NB, GREEN ACRES TF/GRANDE-DIQUE				
2063	MAN, ROCKWOOD HATCHERY (LABRADOR)	1992	6000	EGGS	NB, GREEN ACRES TF/GRANDE-DIQUE				
SALVELINUS FONTINALIS [BROOK TROUT]									
7020	QUE, PISCICULTURE ALLEGHANYS	1987	100000	EGGS	NB, ATLANTIS SEA FARMS				CLIFTON ROYAL (AQUACULTURE)
7019	QUE, PISCICULTURE ALLEGHANYS	1987	180000	EGGS	NB, DOUGLAS DAIGLE/RICHIBUCTO				RICHIBUCTO (AQUACULTURE)
7021	QUE, PISCICULTURE ALLEGHANYS	1987	130000	FING	NB, PIERRE MORIN				GRAND FALLS (AQUACULTURE)
8018	QUE, PISCICULTURE ALLEGHANYS	1988	30000	FING	NB, PIERRE MORIN (REARING)				GRAND FALLS (AQUACULTURE)
8016	QUE, PISCICULTURE ALLEGHANYS	1988	4000	FING	NB, GILLES CORMIER (REARING)				GRAND FALLS (AQUACULTURE)
8015	ME, PHILLIPS HATCHERY	1988	150000	EGGS	NB, FLOWERS COVE H (REARING)				
8014	QUE, PISCICULTURE ALLEGHANYS	1988	100000	EGGS	NB, RONALD NOWLAN (REARING)				POKEMOUCHE (AQUACULTURE)
8013	QUE, PISCICULTURE ALLEGHANYS	1988	20000	EGGS	NB, JAMES McCRAE (REARING)				SAINT JOHN (AQUACULTURE)
8012	QUE, PISCICULTURE ALLEGHANYS	1988	75000	EGGS	NB, ALVIN CRAFT (REARING)				HATFIELD PT (AQUACULTURE)
8011	QUE, PISCICULTURE ALLEGHANYS	1988	300000	EGGS	NB, DOUGLAS DAIGLE (REARING)				RICHIBUCTO (AQUACULTURE)
8010	QUE, PISCICULTURE ALLEGHANYS	1988	75000	EGGS	NB, NOEL BOSSE (REARING)				EDMUNDSTON (AQUACULTURE)
8009	QUE, PISCICULTURE ALLEGHANYS	1988	200000	EGGS	NB, REGINALD BOSSE (REARING)				EDMUNDSTON (AQUACULTURE)
8008	QUE, PISCICULTURE ALLEGHANYS	1988	200000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
8007	QUE, PISCICULTURE ALLEGHANYS	1988	50000	EGGS	NB, WILLIAM KNOW (REARING)				SAINT JOHN (AQUACULTURE)
9007	ONT, WILDCAT TROUT FARM	1989	120000	EGGS	NB, D DAIGLE (REARING)				RICHIBUCTO (AQUACULTURE)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

NEW BRUNSWICK (continued)

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS FONTINALIS [BROOK TROUT] (continued)									
9008	PEI, BROOKVALLEY MARINE	1989	120	FISH	NB, ROBERT METHE (REARING)				SALISBURY (AQUACULTURE)
9009	PEI, BROOKVALLEY MARINE	1989	25000	EGGS	NB, BILL KNOR/GAGETOWN				
9010	PEI, BROOKVALLEY MARINE	1989	5500	FISH	NB, BILL KNOR/GAGETOWN				
9011	PEI, BROOKVALLEY MARINE	1989	21000	EGGS	NB, L McCRAE/HATFIELD POINT				
0007	PEI, BROOKVALLEY MARINE	1990	20000	FING	NB, NBDNRE/MINTO				
0008	WA, BEITEYS RESORT	1990	60000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
0009	WA, BEITEYS RESORT	1990	50000	EGGS	NB, ALVIN CRAFT (REARING)				HATFIELD PT (AQUACULTURE)
0010	WA, BEITEYS RESORT	1990	50000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
0011	PEI, BROOKVALLEY MARINE	1990	6000	FING	NB, BILL KNORR/SAINT JOHN				
0012	QUE, PISCICULTURE ALLEGHANYS	1990	200000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
0013	QUE, PISCICULTURE ALLEGHANYS	1990	300000	EGGS	NB, DOUGLAS DAIGLE (REARING)				RICHIBUCTO (AQUACULTURE)
0014	QUE, PISCICULTURE ALLEGHANYS	1990	275000	EGGS	NB, REGINALD BOSSE (REARING)				EDMUNDSTON (AQUACULTURE)
0015	QUE, PISCICULTURE ALLEGHANYS	1990	50000	EGGS	NB, ALVIN CRAFT (REARING)				HATFIELD PT (AQUACULTURE)
0016	PEI, BROOKVALLEY MARINE	1990	60000	EGGS	NB, LEGERE FISH FARM/CAPE PELE				
0017	QUE, PISCICULTURE ALLEGHANYS	1990	25000	EGGS	NB, McCREA FARM LTD/HATFIELD POINT				
0018	QUE, PISCICULTURE ALLEGHANYS	1990	50000	FING	NB, MEDARD CORMIER/MONCTON				
0019	ME, PHILLIPS HATCHERY	1990	20000	EGGS	NB, NBDNRE/FLOWERS COVE (QUAR)				
1001	ME, PHILLIPS HATCHERY	1991	20000	EGGS	NB, NATURAL RESOURCES/FLOWERS COVE				
1002	QUE, PISCICULTURE ALLEGHANYS	1991	20000	FING	NB, RON NOWLAND ENT POKEMOUCHE				
1003	PEI, BROOK VALLEY MARINE,SOURIS	1991	20000	FING	NB, LEGERE FISH FARM/ROBICHAUD				
1004	QUE, PISCICULTURE ALLEGHANYS	1991	50000	EGGS	NB, LEGERE FISH FARMS/ROBICHAUD				
1005	QUE, PISCICULTURE ALLEGHANYS	1991	150000	EGGS	NB, DAIGLES TROUT FARM/RICHIBUCTO				
1006	QUE, PISCICULTURE ALLEGHANYS	1991	150000	EGGS	NB, REGINALD BOSSE/EDMUNSTON				
1007	QUE, PISCICULTURE ALLEGHANYS	1991	25000	EGGS	NB, MCCREA FARMS/HATFIELD PT				
1008	QUE, PISCICULTURE ALLEGHANYS	1991	20000	EGGS	NB, ALVIN CRAFT/HATFIELD PT				
1009	PEI, BROOK VALLEY MARINE,SOURIS	1991	40000	EGGS	NB, LEGERE FISH FARMS/ROBICHAUD				
1010	PEI, BROOK VALLEY MARINE,SOURIS	1991	80000	EGGS	NB, DUCEY&SONS FISH F/HATFIELD PT				
1011	QUE, PISCICULTURE ALLEGHANYS	1991	50000	EGGS	NB, CLARENCE LEVESQUE/CHARLO				
1012	ME, PHILLIPS STATE HATCHERY	1991	250000	EGGS	NB, NBFWB/FLOWERS COVE QUARANTINE				
2066	PEI, BROOK VALLEY MARINE,SOURIS	1992	30000	EGGS	NB, CLIVE WILSON/FREDERICTON				
2067	PEI, BROOK VALLEY MARINE,SOURIS	1992	15000	FISH	NB, GREEN ACRES TF/GRANDE-DIQUE				
2068	PEI, BROOK VALLEY MARINE,SOURIS	1992	75000	FISH	NB, JEAN MARIE MARTIN/NEW DENMARK				
2069	PEI, BROOK VALLEY MARINE,SOURIS	1992	5000	FISH	NB, FRANCIS BELENANS/HAMSTEAD				
2070	PEI, BROOK VALLEY MARINE,SOURIS	1992	50000	FISH	NB, FRANCIS BELENANS/HAMSTEAD				
2071	QUE, PISCICULTURE ALLEGHANYS	1992	5000	FISH	NB, GREEN ACRES TROUT HAT/GRANDE-DIQUE				
2072	PEI, BROOK VALLEY MARINE,SOURIS	1992	4000	FISH	NB, DUCEY&SONS FF/HATFIELD PT				
2073	QUE, PISCICULTURE ALLEGHANYS	1992	15000	FISH	NB, RON NOWLAN ENTERPRISES/POKEMOUCHE				
2074	PEI, BROOK VALLEY MARINE,SOURIS	1992	2000	FISH	NB, HENRY GOGUEN/COCAGNE				
2075	QUE, PISCICULTURE ALLEGHANYS	1992	50000	EGGS	NB, ALVIN KRAFT/HATFIELD POINT				
2076	QUE, PISCICULTURE ALLEGHANYS	1992	200000	EGGS	NB, PAUL NAPEAU/EDMUNSTON				
2077	QUE, PISCICULTURE ALLEGHANYS	1992	50000	EGGS	NB, CLARENCE LEVESQUE/CHARLO				
2078	QUE, PISCICULTURE ALLEGHANYS	1992	35000	EGGS	NB, LEGERE FISH FARM/ROBICHAUD				
2079	QUE, PISCICULTURE ALLEGHANYS	1992	125000	EGGS	NB, REGINALD BOSSE/EDMUNSTON				
2080	QUE, PISCICULTURE ALLEGHANYS	1992	25000	EGGS	NB, MCCREA FARMS/HATFIELD				
2083	ME, PHILLIPS STATE FISH HATCHERY	1992	110000	EGGS	NB, NBNDRE/FLOWERS COVE		100000		
2084	PEI, BROOK VALLEY MARINE,SOURIS	1992	100000	FISH	NB, FRANCIS BELENANS/HAMSTEAD				

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS FONTINALIS X SALVELINUS ALPINUS [CHARBROOK]									
8004	NB, FLOWERS COVE H (WALTON X PHILLIPS)	P1988	10000	JUV	NB, NBDNRE				MINE PONDS
SALVELINUS NAMAYCUSH X SALVELINUS FONTINALIS [SPLAKE]									
6001	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	1986	100	YEAR	NB, NBDNRE				NORTH LAKE (EXP STOCKING)
6001		1986	550	YEAR					PEABODY LK (EXP STOCKING)
6001		1986	100	YEAR					BLIND LAKE (EXP STOCKING)
7023	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	1987	2000	JUV	NB, NBDNRE				MULLIN STREAM LAKE
7023		1987	500	JUV					BIG MEADOW POND
7023		1987	2000	JUV					NL RIVER LAKE
7023		1987	150	JUV					GRAND MANAN
7023		1987	175	JUV					HARRIS LAKE
7023		1987	700	JUV					GLENN SEVERN
8001	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	P1988	5000	JUV	NB, NBDNRE				GRAND LAKE
8001		P1988	2000	JUV					MULLIN STREAM
8001		P1988	2000	JUV					NL RIVER LAKE
	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	P1989	5000	JUV					LAKE UTOPIA
	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	P1989	150	JUV					GOLDSMITHS LAKE
OSMERUS MORDAX [RAINBOW SMELT]									
6002	NB, (SUCKER BROOK, SKIFF LAKE)	1986	50000	E EGGS	NB, NBDNRE				UNIQUE L (LL SALMON FORAGE)
SALMO SALAR [ATLANTIC SALMON]									
2056	ME, KENNEBEC AQUACULTURE	1992	20000	FISH	NB, HARBOUR BREEZE FISHERIES/ST GEORGE				
2057	ME, KENNEBEC AQUACULTURE	1992	40000	FISH	NB, NORDIC ENTERPRISES/DEER ISLAND				
2058	ME, KENNEBEC AQUACULTURE	1992	210000	FISH	NB, GRAY AQUAFARMS LTD/HAMPTON				
2059	ME, KENNEBEC AQUACULTURE	1992	100000	FISH	NB, GRAY AQUAFARMS LTD/HAMPTON				

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

NEWFOUNDLAND

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
6001	ONT, RAINBOW SPRINGS HATCHERY	1986	5000	5 CM	HOPEALL CAGES (AQC)				
	ONT, RINGWOOD HATCHERY ?	1986	6700	JUV	HOPEALL CAGES ? (AQC)				
7002	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	4000	JUV	NFLD, EPS/NWAFC TANKS (BIOASSAY)	P			TO BE DESTROYED
7003	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	900	JUV	NFLD, MSRL TANKS (RESEARCH)	P			TO BE DESTROYED
7001	ONT, AQUAFARMS CANADA (UNKNOWN)	1987	300	JUV	NFLD, MSRL TANKS (RESEARCH)	P			TO BE INCINERATED
7004	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	10000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			BAY D'ESPOIR (AQUACULTURE)
7007	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	300	JUV	NFLD, DFO/NWAFC TANKS (RESEARCH)				FISH DESTROYED
8013	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	150	15 CM	NFLD, MSRL/MEMORIAL U (RESEARCH)				ST JOHNS, STOCK DESTROYED
8012	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	500	15 CM	NFLD, NWAFC (RESEARCH)				ST JOHNS, STOCK DESTROYED
8010	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	500	10 CM	NFLD, DFO/NWAFC (RESEARCH)				ST JOHNS, STOCK DESTROYED
8009	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	500	7 CM	NFLD, DFO/NWAFC (RESEARCH)				ST JOHNS, STOCK DESTROYED
8015	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	2000	FRY	NFLD, EPS/NWAFC (BIOMONITORING)				
8016	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	2000	FRY	NFLD, EPS/NWAFC (BIOMONITORING)				ST JOHNS, STOCK DESTROYED
8008	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	2000	FRY	NFLD, EPS/NWAFC (BIOMONITORING)				ST JOHNS, STOCK DESTROYED
8017	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	30000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY				ST ALBANS, STOCK DESTROYED
8014	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	125000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1989			ROTI BAY CAGES (AQC)
8011	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	10000	EGGS	NFLD, MARINE INSTITUTE				ST JOHNS, STOCK DESTROYED
8007	ONT,	1988	600	FING	NFLD, BAY D'ESPOIR HATCHERY				
8006	ONT,	1988	100000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
9011	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	50	30-50 G	NFLD, MINL/MINL TANKS (TEACHING)	P			TO BE DESTROYED
9009	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	2000	0.5 G	NFLD, DOE/NWAFC (BIOMONITORING)	P			TO BE DESTROYED
9008	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	2000	0.5 G	NFLD, DOE/NWAFC (BIOMONITORING)	P			TO BE DESTROYED
9007	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	75000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1990			ROTI BAY CAGES (AQC)
9006	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	600	13 CM	NFLD, OSL/BAY D'ESPOIR H (RESEARCH)	P			TO BE DESTROYED
9010	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1990	5000	E EGGS	NFLD, MINL/MINL TANKS (TEACHING)	P			ST JOHNS, TO BE DESTROYED
0001	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	200	FISH	NFLD, DOE/NWAFC (EXPERIMENTAL)				STOCK DESTROYED
0002	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	60000	E EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			SEA CAGES
0003	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	0.5-1 G	NFLD, LEDREW FUDGE (BIOASSAY)				STOCK DESTROYED
0005	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	2000	0.5 G	NFLD, ENV PROTECTION (BIOASSAY)				STOCK DESTROYED
0006	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	0.5-1 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0007	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	10-15 CM	NFLD, NWAFC (INFECTION EXPERIMENTS)				STOCK DESTROYED
0008	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	20000	E EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			SEA CAGES
0009	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1500	0.5 G	NFLD, ENV PROTECTION (BIOASSAY)				STOCK DESTROYED
0011	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1500	40 MM	NFLD. SMBDA/HOLYROOD POND				(AQUACULTURE)
0012	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	0.5-1 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0013	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	10-15 CM	NFLD, NWAFC (IMMUNOLOGY)				STOCK DESTROYED
0015	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	1-2 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0016	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1000	0.5-1 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0017	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	200	FISH	NFLD, MARINE INSTITUTE (EXP)				STOCK DESTROYED
0018	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	130000	E EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			SEA CAGES
0019	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1500	0.5 G	NFLD, ENV PROTECTION (BIOASSAY)				STOCK DESTROYED
0021	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*	?		PEI, BROOK VALLEY MARINE	1990	1000	1-1.5 G	SEE NEXT LINE
0021		*			NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0022	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	150	FISH	NFLD, MARINE INSTITUTE (EXP)				STOCK DESTROYED
1001	ONT, RAINBOW SPRINGS H (HATCHERY)	1991	150000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1992			SEA CAGES
1002	ONT, RAINBOW SPRINGS H (DOMESTIC)	1991	2000	FISH	NFLD, MURRAY'S POND F&C CLUB				POND FOR ANGLING
1003	PEI, BROOKVALLEY MARINE FARM (DOMESTIC)	1991	3500	15 CM	NFLD, STEPHENVILLE IND DEV COMM				FISHOUT POND

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

NEWFOUNDLAND (continued)

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT] (continued)									
1004	ONT, RAINBOW SPRINGS H (DOMESTIC)	1991	300000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1992			SEA CAGES
2006	ONT, RAINBOW SPRINGS H (DOMESTIC)	1992	30000	EGGS	NFLD, HOPEALL HATCHERY				FISHOUT POND
2007	QUE, PISCICULTURE ALLEGHANYS (DOMESTIC)	1992	150000	E EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1993			SEA CAGES
2008	QUE, PISCICULTURE ALLEGHANYS (DOMESTIC)	1992	6700	FISH	NFLD, BAY D'ESPOIR HATCHERY	P1993			SEA CAGES
2009	PEI, BROOKVALLEY MARINE FARM (DOMESTIC)	1992	52000	FISH	NFLD, BAY D'ESPOIR HATCHERY	P1993			SEA CAGES
2010	ONT, RAINBOW SPRINGS H (DOMESTIC)	1992	2500	EGGS	NFLD, MURRAY'S POND HATCHERY				MURRAY'S POND (SPORT FISHING)
2011	ONT, RAINBOW SPRINGS H (DOMESTIC)	1992	186000	EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1994			SEA CAGES
2012	PEI, BROOKVALLEY MARINE FARM (DOMESTIC)	1992	7500	FISH	NFLD, HAROLD SMITH/SPIRITY POND				SEA CAGES
SALMO SALAR [ATLANTIC SALMON]									
8001	NB, KELLY COVE SEA CAGES (FUNDY/SJR)	*1988	130000	EGGS	NB, BRIDEN/CHAMCOOK H (QUARANTINE)	1989	130000	EGGS	SEE NEXT LINE
8001					NFLD, BAY D'ESPOIR H (QUARANTINE)				
9012	NB, KELLY COVE SEA CAGES (FUNDY/SJR)	1989	100000	EGGS	NB, CHAMCOOK HATCHERY (QUARANTINE)	1989	100000	EGGS	SEE NEXT LINE
9012					NFLD, BAY D'ESPOIR H (QUARANTINE)				
1005	NB, AQUA VENTURES LTD (FUNDY)	1991	100000	EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)	P1992	75000	FISH	SEA CAGES
2001	NB, AQUA VENTURES LTD (FUNDY)	1992	100000	EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)	P1993	80000	FISH	SEA CAGES
2002	NB, AQUA VENTURES LTD (FUNDY)	1992	150000	EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)	P1994			SEA CAGES
SALVELINUS ALPINUS [ARCTIC CHAR]									
	LAB, (FRASER RIVER)	1986	54500	EGGS	NFLD, MSRL				
7005	LAB, (FRASER RIVER)	1987	10000	EGGS	NFLD, MSRL (INCUBATION)				EGGS DESTROYED
7006	LAB, (FRASER RIVER)	1987	60000	EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)				EGGS DESTROYED
8005	MAN, DFO, WINNIPEG	1988	30000	EGGS	NFLD, AQUA BLUE FARMS/PORT REXTON				
8004	NB, HUNTSMAN MARINE LABORATORY	1988	30000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
8003	MAN, DFO, WINNIPEG	1988	10000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
8002	LAB, (IKINET BROOK)	1988	5000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
9001	PEI, INTEGRATED AQUATICS (FRASER R/DOM)	*1989	150	7-10 CM	NFLD, DFO/NWAFC (RESEARCH)	P			STOCK TO BE DESTROYED
9002	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	*1989	5000	EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1990			ROTI BAY CAGES (AQC)
9003	NB, HUNTSMAN MARINE LAB (FRASER R/DOM)	*1989	30000	E EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)	P1990			ROTI BAY CAGES (AQC)
9004	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	*1989	3000	EGGS	NFLD, MARINE INSTITUTE (TEACHING)	P			STOCK TO BE DESTROYED
9005	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	*1989	5000	EGGS	NFLD, NORDCO AQUARIUM (EXPERIMENTS)	1989			ST JOHNS, STOCK DIED
0014	PEI, IAS (EX ST JOHN EX FRASER R/DOM)	1990	200	FING	NFLD, NWAFC (RESEARCH)	P			STOCK TO BE DESTROYED
1006	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	1991	10000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1007	PEI, IAS (PURTILL/DOM)	1991	10000	12-15CM	NFLD, VALLEY CHAR INC.				LAKE CAGES, GRAND LAKE
1008	PEI, BROOKVALLEY MARINE (FRASER R/DOM)	1991	31000	FISH	NFLD, GNPDC				INDUSTRY DEMONSTRATION
1009	MAN, WILDWOOD ENT LTD (DOMESTIC)	1991	10000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1010	MAN, WILDWOOD TROUT F (NAUYUK L/DOM)	1991	10000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1011	PEI, BROOKVALLEY MARINE (FRASER R/DOM)	1991	310000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1012	PEI, BROOKVALLEY MARINE (FRASER R/DOM)	1991	40000	EGGS	NFLD, GNPDC				INDUSTRY DEMONSTRATION
1013	PEI, BROOKVALLEY MARINE (DOMESTIC)	1991	10000	FISH	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1014	QUE, PISCICULTURE DES ALLEGHANYS	1991	40000	EGGS	NFLD, DFO/NEW TECH CHAR FARMS				RESEARCH/DEMON FISHOUT POND
2003	MAN, WILDWOOD TROUT F (FRASER R DOM)	1992	115400	EGGS	NFLD, DFO/NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
2004	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	1992	5000	EGGS	NFLD, DFR/NEW TECH CHAR FARMS				RESEARCH UNDER FIELD CONDITIONS

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS FONTINALIS [BROOK TROUT]									
2005	PEI, BROOKVALLEY MARINE (DOMESTIC)	1992	5500	6-8 IN	NFLD, STEPHENVILLE IND DEV COMM				MINE POND/AQUACULTURE

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992 **NEW HAMPSHIRE**

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS KISUTCH [COHO SALMON]									
	NH,	1986	30000	FRY					GREAT BAY TRIBUTARIES
6003	NH, MILFORD HATCHERY (LAMPREY RIVER)	1986	61745	PARR					LAMPREY R (SPORT FISHERY)
6002	NH, MILFORD HATCHERY (LAMPREY RIVER)	1986	130000	SMOLTS					LAMPREY R (SPORT FISHERY)
	NH,	1986	129665	SMOLTS					GREAT BAY ESTUARY
7003	NH, MILFORD HATCHERY (LAMPREY RIVER)				NH, TWIN MOUNTAIN HATCHERY ?	1987	151000	SMOLTS	LAMPREY RIVER (RESEARCH)
8004	NY, SALMON RIVER H (SALMON RIVER)				NH, TWIN MOUNTAIN HATCHERY	1988	99411	SMOLTS	LAMPREY R (RECREATION)
9005	MI, PLATTE RIVER HATCHERY (PLATTE)	1987	300000	E EGGS	NH, NHFG/TWIN MOUNTAIN HATCHERY	1989	200295	SMOLTS	LAMPREY R (RECREATION)
0001	MI, PLATTE RIVER HATCHERY (OREGON)	P1990	400000	SMOLTS					LAMPREY R (RECREATION)
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
	NY, (LAKE ONTARIO)	1986	47215	SMOLTS					GREAT BAY ESTUARY
6004	NY, SALMON RIVER H (SALMON RIVER)	1986	47000						LAMPREY R (RECREATION)
7004	NY, SALMON RIVER H (SALMON RIVER)	1987	37000						LAMPREY R (RECREATION)
ONCORHYNCHUS TSHAWYTSCHA [CHINOOK SALMON]									
8005	NY, SALMON R H (LK ONTARIO/SALMON R)				NH, TWIN MOUNTAIN HATCHERY	1988	110918	AGE I	LAMPREY R (RECREATION)
8003	NY, SALMON R H (LK ONTARIO/SALMON R)				NH, TWIN MOUNTAIN HATCHERY	1988	431460	FRY	LAMPREY R (RECREATION)
9004	NY, SALMON R H (LK ONTARIO/SALMON R)	1988	1100000	EGGS	NH, NHFG/MILFORD HATCHERY	1989	631000	SMOLTS	LAMPREY R (RECREATION)
0001	NY, SALMON R H (LK ONTARIO/SALMON R)	1989	700000	EGGS	NH, NHFG/MILFORD HATCHERY	1990	427000	SMOLTS	LAMPREY & EXETER RIVERS
0002	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	779000	EGGS	NH, NHFG/MILFORD HATCHERY	1991	428198	SMOLTS	(RECREATIONAL FISHERY)
1001	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	510000	G EGGS	NH, NHFG/MILFORD HATCHERY				LAMPREY & EXETER RIVERS
1001			250000	E EGGS	NH, NHFG/MILFORD HATCHERY	1992	495000	SMOLTS	(RECREATIONAL FISHERY)
2099	NY, SALMON R H (LK ONTARIO/SALMON R)	1992	420000	E EGGS	NH, NHFG/MILFORD HATCHERY	P1993		SMOLT	LAMPREY R (RECREATION)
SALMO TRUTTA [BROWN TROUT]									
6001	NH, MILFORD HATCHERY (DOMESTIC)	1986	9850	SMOLTS	NH, NHFG				8 RIVERS (RESEARCH)
7001	NH, MILFORD HATCHERY (DOMESTIC)	P1987	9850	SMOLTS	NH, NHFG				8 RIVERS (RESEARCH)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992 **NEW JERSEY**

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS SPONSOR/FACILITY (PURPOSE)				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE		YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
7001	NY, ALTMAR HATCHERY (SALMON RIVER)	1987	53000	E EGGS	NJ, HAYFORD HATCHERY	19887			LARGE LOSS, PREDATION
7001						1988	1128	SMOLTS	RARITAN RIVER (RESEARCH)
2001	CA, MT LASSEN T FARM(HILDEBRAND W)	1992	5000	EGGS	NJ, STATE AQUARIUM	1993	5000	2-3JUV	FISH FOOD (LOT 07/20/92)
2002	CA, MT LASSEN T FARM(HILDEBRAND W)	1992	5000	EGGS	NJ, STATE AQUARIUM	1993	5000	2-3JUV	FISH FOOD (LOT 07/23/92)
2003	CA, MT LASSEN T FARM(HILDEBRAND W)	1992	5000	EGGS	NJ, STATE AQUARIUM	1992	5000	SWIMUP	FISH FOOD (LOT 11/30/92)
2004	CA, MT LASSEN T FARM(HILDEBRAND W)	1992	5000	EGGS	NJ, STATE AQUARIUM	1993	5000	SWIMUP	FISH FOOD (LOT 12/23/92)
2005	CA, MT LASSEN T FARM(HILDEBRAND W)	1992	5000	EGGS	NJ, STATE AQUARIUM	1993	5000	SWIMUP	FISH FOOD (LOT 12/31/92)
3001	CA, MT LASSEN T FARM(HILDEBRAND W)	1993	5000	EGGS	NJ, STATE AQUARIUM	1993	5000	JUV	FISH FOOD (LOT 01/14/93)
3002	CA, MT LASSEN T FARM(HILDEBRAND W)	1993	5000	EGGS	NJ, STATE AQUARIUM	1993	5000	JUV	FISH FOOD (LOT 01/26/93)
3003	CA, MT LASSEN T FARM(HILDEBRAND W)	1993	5000	EGGS	NJ, STATE AQUARIUM	1993	5000	FRY	ON HAND MARCH 1993
ONCORHYNCHUS TSHAWYTSCHA [CHINOOK SALMON]									
6001	NY, ALTMAR HATCHERY (SALMON RIVER)	1986	70000	EGGS	NJ, NJDEP/HAYFORD H (EXP REARING)	1987	59705		RARITAN RIVER
7002	NY, ALTMAR HATCHERY (SALMON RIVER)	1987	95000	E EGGS	NJ, NJDEP/HAYFORD H (EXP REARING)	1988	91170	SMOLTS	RARITAN RIVER

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

NEW YORK

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS KISUTCH [COHO SALMON]									
6004	NY, SALMON R H (LK ONTARIO/SALMON R)	1986	547000	JUV	NY, NYDEC				LK ONTARIO (ENHANCEMENT)
6008	NY, SALMON R H (LK ONTARIO/SALMON R)	1986	102000	YEAR	NY, NYDEC				LK ERIE (SPORT FISHING)
6011	NY, SALMON R H (LK ONTARIO/SALMON R)	1986	194000	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
6011		1986	268000	FING					LK ONTARIO (SPORT FISHING)
7011	NY, SALMON R H (LK ONTARIO/SALMON R)	P1987	350000	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
7009	NY, SALMON R H (LK ONTARIO/SALMON R)	P1987	100000	1+	NY, NYDEC				LK ONTARIO (SPORT FISHING)
7034	NY, 2 HATCHERIES (SALMON RIVER)	1987	80000	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8015	NY, 2 HATCHERIES (SALMON RIVER)	1988	299850	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8016	NY, 2 HATCHERIES (SALMON RIVER)	1988	256500	FING	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8028	NY, SALMON R H (LK ONTARIO/SALMON R)	1988	31600	16 MO					CHAUTAUQUA CR, LK ERIE
8028		1988	32600	6 MO					18 MILE CREEK, LK ERIE
8028		1988	4500	16 MO					CANADAWAY CREEK, LK ERIE
8028		1988	90250	6 MO					CATTARAUGUS CR, LK ERIE
8028		1988	40000	6 MO					CATTARAUGUS CR, LK ERIE
8028		1988	40000	6 MO					18 MILE CREEK, LK ERIE
8027	NY, CALEDONIA HATCHERY (SALMON R)	1988	37500	11 MO	NY, NYDEC				CATTARAUGUS CR, LK ERIE
9003	NY, SALMON R H (LK ONTARIO/SALMON R)	1989	180000	F FING	NY, NYDEC				3 LK ERIE TRIBS (STOCKING)
9004	NY, SALMON R H (LK ONTARIO/SALMON R)	1988	175000	F FING	NY, NYDEC/CALEDONIA HATCHERY	1989	147865	YEAR	3 LK ERIE TRIBS (STOCKING)
9013	NY, SALMON R H (LK ONTARIO/SALMON R)	1989	143040	YEAR					LAKE ONTARIO (STOCKING)
9013		1989	53400	F FING					LAKE ONTARIO (STOCKING)
9014	NY, CALEDONIA H (LK ONTARIO/SALMON R)	1989	54065	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9014		1989	160000	F FING					LAKE ONTARIO (STOCKING)
0008	NY, SALMON R H (LK ONTARIO/LK ONTARIO)	1990	162500	FING	NY, NYDEC, LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0009	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	144400	FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0010	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	187200	F FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0011	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	110000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				LAKE ONTARIO (STOCKING)
0012	NY, SALMON R H (LK ONTARIO/SALMON R)	P1991	90000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				LAKE ONTARIO (STOCKING)
0013	NY, SALMON R H (LK ONTARIO/SALMON R)	P1991	155000	FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
1006	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	161250	F FING	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
1007	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	131750	F FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING
1008	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	97000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				PUBLIC FISHING
1009	NY, SALMON R H (LK ONTARIO/SALMON R)	1992	155000	S FING	NY, NYDEC (LAKE ONTARIO)				PUBLIC FISHING
1010	NY, SALMON R H (LK ONTARIO/SALMON R)	P1992	90000	EAR	NY, NYDEC (PRODUCE SPAWNING RUN)				PUBLIC FISHING
2106	NY, SALMON R H (LK ONTARIO/SALMON R)	1992	275700	FING	NY, NYDEC LAKE ERIE UNIT				PUBLIC FISHING
2107	NY, SALMON R H (LK ONTARIO/SALMON R)	1992	290000	S FING	NY, NYDEC (LAKE ONTARIO)				PUBLIC FISHING
2108	NY, SALMON R H (LK ONTARIO/SALMON R)	1992	94100	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				PUBLIC FISHING
2109	NY, SALMON R H (LK ONTARIO/SALMON R)	P1993	245000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				PUBLIC FISHING
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
6015	NY, CALEDONIA HATCHERY (DOMESTIC)	1986	103000	JUV	NY, NYDEC				LK ONTARIO (SPORT FISHING)
6006	NY, SALMON RIVER H (SALMON R/WA SS)	1986	100000	YEAR					LAKE ERIE (SPORT FISHING)
6003	NY, SALMON RIVER H (SALMON R/WA SS)	1986	335000	1+					LK ONTARIO (SPORT FISHING)
6007	MI, IN, (LK MICHIGAN/SKAMANIA SS)				NY, NYDEC/SALMON RIVER HATCHERY	1986	17950	YEAR	LAKE ERIE (SPORT FISHING)
7016	NY, SALMON RIVER H (STEELHEAD STRAIN)	P1987	412000	YEAR					
7003	NY, SALMON RIVER H (LK ONTARIO/WA SS)	1987	130000	JUV					4 LAKE ERIE TRIBUTARIES
7002	IN, (LK MICHIGAN/SKAMANIA SS)				NY, NYDEC/SALMON RIVER HATCHERY	1987	20000	YEAR	CHAUTAUQUA CREEK

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS SPONSOR/FACILITY (PURPOSE)				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE		YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS [RAINBOW TROUT] (continued)									
7027	NY, SALMON RIVER H (DOMESTIC/WFC)	1987	23000	FING					NOT IDENTIFIED
7028	NY, SALMON R H (DOMESTIC/WYTHEVILLE)	1987	17200	FING					NOT IDENTIFIED
7029	NY, SALMON RIVER HATCHERY (DOMESTIC)	1987	90600	YEAR					NOT IDENTIFIED
7024	NY, SALMON R H (WA OR SKAMANIA SS)	1987	60000	FING					LK ONTARIO TRIBUTARIES
7025	NY, 3 HATCHERIES (FINGER LAKES SS)	1987	69350	FING					LK ONTARIO TRIBUTARIES
7026	NY, 3 HATCHERIES (WA OR SKAMANIA SS)	1987	443340	YEAR					LK ONTARIO TRIBUTARIES
	NY, RANDOLPH H (DOMESTIC/NASHUA)				NY, CALEDONIA HATCHERY	1988	5000	10 MO	BUFFALO CREEK, LK ERIE
8027	NY, CALEDONIA H (DOMESTIC/NASHUA)	1988	7500	10 MO					18 MILE CREEK
8027		1988	5000	0 MO					CANADAWAY CREEK
8027		1988	5000	10 MO					CATTARAUGUS CREEK
8027		1988	17800	14 MO					EAGLE BAY, LK ERIE
8027		1988	1600	5 MO					STURGEON POINT, LK ERIE
8026	NY, RANDOLPH H (DOMESTIC/NASHUA)	1988	5000	14 MO					BUFFALO HARBOUR
8007	NY, CALEDONIA H (CALEDONIA/DOMESTIC)	1988	150500	FING					LKE ONTARIO (ENHANCEMENT)
8008	NY, CALEDONIA H (CALEDONIA/DOMESTIC)	1988	77370	YEAR					LKE ONTARIO (ENHANCEMENT)
8024	NY, SALMON RIVER H (SALMON R/WA SS)	1988	50000	6 MO					SPOONER BROOK, LK ERIE
8024		1988	50000	6 MO					CLEAR CREEK
8024		1988	8000	6 M0					CHAUTAUQUA CREEK
8024		1988	37000	6 M0					CATTARAUGUS CREEK
8024		1988	23700	6 M0					18 MILE CREEK
8025	IN, (SKAMANIA STEELHEAD STRAIN)				NY, CALEDONIA HATCHERY	1988	10100	16 MO	CATTARAUGUS CREEK
8025		1988	18000	16 M0					CHAUTAUQUA CREEK
8005	NY, VARIOUS (FINGER KK X DOMESTIC SS)	1988	6780	YEAR					LK ONTARIO TRIBUTARIES
8004	NY, VARIOUS HATCHERIES (SKAMANIA SS)	1988	107000	YEAR					LK ONTARIO TRIBUTARIES
8003	NY, VARIOUS HATCHERIES (WA SS)	1988	293700	YEAR					LK ONTARIO TRIBUTARIES
8006	NY, VARIOUS HATCHERIES	1988	308050	FING					LK ONTARIO TRIBUTARIES
9005	NY, SALMON RIVER H (SALMON R/SS)	1989	13100	F FING	NY, NYDEC				CATTARAUGUS CR (STOCKING)
9005		1989	102900	YEAR					4 LK ERIE TRIBS (STOCKING)
9017	NY. CALEDONIA H (SALMON R/WA SS)	1989	212440	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9018	NY, SALMON RIVER H (SALMON R/WA SS)	1989	171970	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9018		1989	75000	F FING					LAKE ONTARIO (STOCKING)
9019	NY, CALEDONIA HATCHERY (DOM/NASHUA)	1989	93790	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9019		1989	25000	F FING					LAKE ONTARIO (STOCKING)
0001	NY, SALMON RIVER H (LK ONTARIO/WILD)				NY, NYDEC, LAKE ERIE UNIT	1990	120700	YEAR	LAKE ERIE (STOCKING)
0002	NY, SALMON RIVER H (LK ONTARIO/WILD)	1990	48400	FING	NY, NYDEC, LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0003	NY. CALEDONIA H (SALMON RIVER/WA SS)	1990	287200	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0004	NY, SALMON RIVER H (SALMON R/WA SS)	1990	125000	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0005	NY, SALMON RIVER H (SALMON R/WA SS)	1990	180000	FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0006	NY, SALMON RIVER H (SALMON R/WA SS)	P1991	375000	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0007	NY, SALMON R H (LK ONTARIO/SKAM SS)	P1991	82000	YEAR	NY, NYDEC (PRODUCE SPRING RUN)				LAKE ONTARIO (STOCKING)
1005	NY, LAKE ONTARIO (STEELHEAD/WILD)	1991	143000	YEAR	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING (ANNUALLY SCH)
1015	NY, LAKE ONTARIO (STEELHEAD/WILD)	P1993	375000	YEAR	NY, NYDEC LK ONTARIO				PUBLIC FISH/BROODSTOCK
1016	NY, LAKE ONTARIO (STEELHEAD/SKAMANIC)	P1993	82000	EAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/BROODSTOCK
1017	NY, LK ONTARIO(WASHINGTON/SALMON R)	1991	519300	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/BROODSTOCK
1018	NY, LAKE ONTARIO(STEELHEAD/SKAMANIC)	1991	32000	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/BROODSTOCK
1019	NY, LK ONT(STEELHEAD/WASH/SAL RIVER)	1991	175000	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC STOCKING
1020	NY, LK ONT(STEELHEAD/WASH/SAL RIVER)	1991	0000	F FING	NY, NYDEC LAKE ONTARIO				PUBLIC STOCKING

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT] (continued)									
2115	NY, LK ONT(STEELHEAD/WASH/SAL RIVER	1992	105000	YEAR	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
2116	NY, SALMON RIVER H (LK ONTARIO/WILD)	1992	130000	F FING	NY, NYDEC LAKE ERIE UNIT				LAKE ERIE (STOCKING)
2117	NY, LK ONT(STEELHEAD/WASH/SAL RIVER	1992	430000	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/BROODSTOCK
2118	NY, LAKE ONTARIO (STEELHEAD/SKAMANIC)	1992	84780	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC STOCKING
ONCORHYNCHUS NERKA KOKANEE [KOKANEE SALMON]									
6002	CT, EAST TWIN LAKE				NY, NYDEC/ROME HATCHERY	P1986	165090	0+	6-10 LAKES (ENHANCEMENT)
7001	CT, EAST TWIN LAKE	1987	197000	EGGS	NY, NYDEC/CATSKILL HATCHERY	P1987			6-10 LAKES (ENHANCEMENT)
7010	CT, EAST TWIN LAKE				NY, NYDEC/ROME H (REARING)	P1987	90300	FRY	8 INLAND LK (ENHANCEMENT)
9001	CT, EAST TWIN LK H (EAST TWIN LK)	1988	93000	EGGS	NY, NYDEC/CATSKILL HATCHERY	1988	93000	EGGS	SEE NEXT LINE
9001					NY, ROME HATCHERY	1989	55000	FING	INLAND LKS (STOCKING)
0014	CT, EAST TWIN LAKE	1989	186000	EGGS	NY, NYDEC/CATSKILL HATCHERY	1989	135000	EGGS	SEE NEXT LINE
0014					NY, ROME HATCHERY	1990	115000	FING	UNIDENTIFIED (ENHANCEMENT)
1001	CT, EAST TWIN LAKE	1990	100000	EGGS	NY, CATSKILL H				
1001		1990	100000	EGGS	NY, ROME HATCHERY				
1001					FACILITY NOT STATED	1991	78000	FING	NYDEC(REC FISHING 7 LAKES)
2109	CT, EAST TWIN LAKE	1992	210000	EGGS	NY, CATSKILL H				SEE BELOW
2109		1992	191000	EGGS	NY, ROME HATCHERY	1993	170000	S FING	NYDEC(REC FISHING 6-10 LAKES)
ONCORHYNCHUS TSHAWYTSCHA [CHINOOK SALMON]									
6009	MI, (LAKE MICHIGAN)				NY, NYDEC/SALMON RIVER H	1986	529400	SP FING	LK ERIE (SPORT FISHING)
6012	NY, 2 HATCHERIES (SALMON RIVER)	1986	2849000	SP FING					LK ONTARIO (SPORT FISHING)
7033	NY, 2 HATCHERIES (SALMON RIVER)	1987	3111330		NY, NYDEC				LK ONTARIO (SPORT FISHING)
8014	NY, 2 HATCHERIES (SALMON RIVER)	1988	2848000	SP FING	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8029	NY, SALMON R H (LK ONTARIO/SALMON R)	1988	500000	6 MO					CATTARAUGUS CR, LAKE ERIE
8029		1988	20000	6 MO					18 MILE CREEK, LAKE ERIE
9015	NY, SALMON R H (LK ONTARIO/SALMON R)	1989	620000	SP FING	NY, NYDEC				3 LAKE ERIE TRIBUTARIES
9015		1989	2212200	SP FING					LAKE ONTARIO (STOCKING)
9016	NY, CALEDONIA H (LK ONTARIO/SALMON R)	1989	540000	SP FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0015	NY, SALMON R H (LK ONTARIO/LK ONTARIO)	1990	574200	SP FING	NY, NYDEC, LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0016	NY, CALEDONIA H (LK ONTARIO/SALMON R)	1990	540000	SP FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0017	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	2180000	SP FING	NY, NYDEC (PRODUCE SPAWNING RUN)				LAKE ONTARIO (STOCKING)
0018	NY, SALMON R H (LK ONTARIO/SALMON R)	P1991	2700000	SP FING	NY, NYDEC (PRODUCE SPAWNING RUN)				LAKE ONTARIO (STOCKING)
1003	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	525000	S FING	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
1013	NY, SALMON R H (LK ONTARIO/SALMON R)	P1992	2700000	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/SPAWN RUN
1014	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	2835000	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/SPAWN RUN
2110	NY, SALMON R H (LK ONTARIO/SALMON R)	1992	565000	S FING	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
2111	NY, SALMON R H (LK ONTARIO/SALMON R)	1992	2798215	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/SPAWN RUN
3005	NY, SALMON R H (LK ONTARIO/SALMON R)	P1993	1600000	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/SPAWN RUN
SALMO SALAR [ATLANTIC SALMON]									
6017	NY, 2 H (PENOBSCOT & LITTLE CLEAR)	1986	55000	YEAR					LAKE ONTARIO (RESTORATION)
7023	NY, CORTLAND HATCHERY (PENOBSCOT)	1987	9130	YEAR					LAKE ONTARIO (RESTORATION)
7017	NY, ADIRONDACK H (LITTLE CLEAR)	1987	49000	YEAR					LAKE ONTARIO (RESTORATION)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALMO SALAR [ATLANTIC SALMON]									
8001	NY, CORTLAND HATCHERY (PENOBSCOT)	1988	5530	FING					LAKE ONTARIO TRIBUTARIES
8002	NY, ADIRONDACK H (LITTLE CLEAR)				NY, VARIOUS HATCHERIES	1988	31900	YEAR	LAKE ONTARIO TRIBUTARIES
9010	VT, PITTSFORD H (GRAND LK STREAM)	1989	44020	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9011	NY, TUNISON HATCHERY (PENOBSCOT)	1989	290	21 MO	NY, NYDEC				LAKE ONTARIO (STOCKING)
9011		1989	4710	YEAR					LAKE ONTARIO (STOCKING)
9011		1989	14670	F FING					LAKE ONTARIO (STOCKING)
SALMO TRUTTA [BROWN TROUT]									
6014	NY, 3 HATCHERIES (DOMESTIC)	1986	442000	YEAR					LK ONTARIO (SPORT FISHING)
6010	WEST GERMANY, (SEA RUN)	1986	20000	EGGS	NY, COLD SPRINGS HATCHERY	P			LONG ISLAND
6001	WEST GERMANY, (SEEFORELLEN)				NY, NYDEC/CATSKILL HATCHERY	P1986	12000	1+	SEVERAL LAKES (ENHANCEMENT)
7022	NY, SEVERAL HATCHERIES (DOMESTIC)	1987	25000	YEAR	NY, NYDEC				DUNKIRK HARBOUR, LAKE ERIE
7022		1987	25000	YEAR					ATTARAUGUS CR, LAKE ERIE
7030	NY, 2 HATCHERIES (DOMESTIC)	1987	417760	YEAR					LAKE ONTARIO (ENHANCEMENT)
8023	NY, CATSKILL H (SEEFORELLEN, W GERMAN)				NY, CALEDONIA HATCHERY (REARING)	1988	20020	3 MO	CANADAWAY CR, LAKE ERIE
8022	NY, RANDOLPH H (DOMESTIC/RANDOLPH)	1988	5000	10 MO					BUFFALO CR, LAKE ERIE
8019	NY, RANDOLPH H (DOMESTIC/RANDOLPH)	1988	7400	10 MO					18 MILE CREEK, LAKE ERIE
8019		1988	5000	10 MO					CANADAWAY CR, LAKE ERIE
8019		1988	5000	10 MO					CATTARAUGUS CR, LAKE ERIE
8018	NY, CATSKILL HATCHERY (ROME)				NY, CALEDONIA HATCHERY (REARING)	1988	19000	17 M0	SILVER CREEK, LAKE ERIE
8016	NY, RANDOLPH HATCHERY (ROME LAB)	1988	5000	17 M0					DUNKIRK HARBOUR, LAKE ERIE
8017	NY, BATH HATCHERY				NY, CALEDONIA HATCHERY (REARING)	1988	14000	17 M0	DUNKIRK HARBOUR, LAKE ERIE
8009	NY, VARIOUS H (SEEFORELLEN)	1988	20000	FING					LAKE ONTARIO (ENHANCEMENT)
8010	NY, VARIOUS H (DOMESTIC OR SKAMANIA)	1988	26370	FING					LAKE ONTARIO (ENHANCEMENT)
8011	NY, VARIOUS H (DOMESTIC OR SKAMANIA)	1988	404310	YEAR					LAKE ONTARIO (ENHANCEMENT)
9002	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1989	45000	YEAR	NY, NYDEC				SEVERAL LAKES (STOCKING)
9002		1989	15130	YEAR					DUNKIRK HARBOUR (STOCKING)
9002		1989	40000	YEAR					LAKE ONTARIO (STOCKING)
9012	NY, CALEDONIA H (CALEDONIA/ROME LAB)	1989	282630	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9012		1989	37950	F FING					LAKE ONTARIO (STOCKING)
9020	NY, SALMON RIVER HATCHERY (ROME LAB)	1989	84680	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0019	NY, RANDOLPH H (DOMESTIC/RANDOLPH)	1990	22000	UNID	NY, DEC LK ERIE UNIT (RV FIN CLIP)				LAKE ERIE (STOCKING)
0020	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1990	25000	YEAR	NY, DEC LK ERIE UNIT (LP FIN CLIP)				LAKE ERIE (STOCKING)
0021	NY, CALEDONIA H (CALEDONIA/SEEFORELLEN)	1990	37300	F FING	NY, NYDEC LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0022	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1990	48450	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0024	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1990	45000	YEAR	NY, NYDEC (FISHERY ENHANCEMENT)				LAKE ONTARIO (STOCKING)
0023	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	P1991	40000	YEAR	NY, NYDEC				10 INLAND LAKES (STOCKING)
1002	NY, CALEDONIA H (CATSKILL/SEEFORELLEN)	1991	40000	YEAR	NY, NYDEC				STOCKING 10 LAKES
1004	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1991	23000	YEAR	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
1012	NY, CALEDONIA H (LK ONT/SEEFORELLEN)	P1993	40000	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING
1011	NY, CALEDONIA H (LK ONT/SEEFORELLEN)	1991	36800	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING
2112	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1992	25000	YEAR	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
3004	NY, CALEDONIA H (SEEFORELLEN)	1993	50000	S YEAR	NY, NYDEC (FISHERY ENHANCEMENT)				8-10 INLAND LAKES
2113	NY, CALEDONIA H (DOMESTIC/SEEFORELLEN)	1992	45290	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING (BROODSTOCK)
2114	NY, CALEDONIA H (DOMESTIC/SEEFORELLEN)	P1993	66000	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING (BROODSTOCK)

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS NAMAYCUSH [LAKE TROUT]									
6013	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1986	1382000	YEAR					LK ONTARIO (REHABILITATION)
7031	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1987	366300	FING					LK ONTARIO (REHABILITATION)
7032	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1987	818100	YEAR					LK ONTARIO (REHABILITATION)
8012	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1988	247100	FING					LAKE ONTARIO (RESTORATION)
8013	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1988	767500	YEAR					LAKE ONTARIO (RESTORATION)
9006	PA, ALLEGHENY HATCHERY (SENECA LAKE)	1989	352300	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)
9007	PA, ALLEGHENY HATCHERY (SUPERIOR)	1989	240000	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)
9007		1989	19500	F FING					LK ONTARIO (REHABILITATION)
9008	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1989	158000	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)
9008		1989	212500	F FING					LK ONTARIO (REHABILITATION)
9009	NY, CALEDONIA H (SENECA LAKE/SENECA)	1989	28000	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

NOVA SCOTIA

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
6001	WV, WHITE SULPHUR SPRINGS HATCHERY	1986	100000	EGGS	NS, DFO/MERLIN FISH FARMS				WESTCHESTER (FISH FARM)
6001		1986	50000	EGGS	NS, DFO/COLDBROOK FCS				
6001		1986	100000	EGGS	NS, DFO, NSDF/ST PETERS HATCHERY				
7003	WA, BEITEYS RESORT	1987	550000	EGGS	NS, NSDF/ST PETERS HATCHERY	P			
7005	ONT, SPRING VALLEY HATCHERY	1987	150000	EGGS	NS, NSDF/ST PETERS HATCHERY	P			
7004	ONT, AQUAFARMS CANADA	1987	50000	EGGS	NS, MERLIN FISH FARMS				WESTCHESTER (FISH FARM)
7001	WV, WHITE SULPHUR SP H (WYTHEVILLE)	1987	250224	EGGS	NS, DFO, NSDF/FRASERS MILLS H	P			(LOCAL STOCKING)
7002	WA, BEITEYS RESORT	1987	100000	EGGS	NS, MERLIN FISH FARMS				WESTCHESTER (FISH FARM)
7006	PEI, INTEGRATED AQUATICS	1987	45000	FING	NS, OSTREA SEA FARMS				SHAD BAY (AQUACULTURE)
8013	ONT, RAINBOW SPRINGS HATCHERY	1988	2000	FING	NS, EPS/DARTMOUTH (RESEARCH)				
8012	ONT, RAINBOW SPRINGS HATCHERY	1988	35000	FRY	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
8011	WA, BEITEYS RESORT	1988	200000	FRY	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
8010	ONT, SPRING VALLEY HATCHERY	1988	250000	EGGS	NS, NSDF/FRASERS MILLS H	P			(LOCAL STOCKING)
8009	ONT, AQUAFARMS CANADA	1988	30000	EGGS	NS, NSDF/FRASERS MILLS H (REARING)	P			(LOCAL STOCKING)
8008	ONT, AQUAFARMS CANADA	1988	100000	EGGS	NS, NSDF/ST PETERS HATCHERY	P			(ENHANCEMENT)
8007	WV, WHITE SULPHUR SPRINGS HATCHERY	1988	250000	EGGS	NS, NSDF/FRASERS MILLS H (REARING)	P			(ENHANCEMENT)
8006	ONT, RAINBOW SPRINGS HATCHERY	1988	200000	TR EGGS	NS, NOVA AQUA SMOLT (REARING)				GLACE BAY (AQUACULTURE)
9004	ONT, VAN AQUA INC, BRANTFORD	1989	6000	FING	NS, NOVA AQUA SEA LIMITED				GLACE BAY
9005	WA, BEITEYS RESORT	1989	150000	EGGS	NS, MERLIN FISH FARMS				WENTWORTH (FISH FARM)
9007	ONT, RAINBOW SPRINGS HATCHERY	1989	100000	EGGS	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
9008	PEI, INTEGRATED AQUATICS	1989	125000	FING	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
9009	PEI, BROOKVALLEY MARINE	1989	25000	FING	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
9010	ONT, SPRING VALLEY H, PETERSBURG	1989	100000	EGGS	NS, LITTLE HARB TROUT FARM				TRENTON (TROUT FARM)
9011	WV, WHITE SULPHUR SPRINGS HATCHERY	1989	250000	EGGS	NS, NSDF/FRASERS MILLS H				
0020	ONT, RAINBOW SPRINGS HATCHERY	1990	40000	FING	NS, NOVA AQUA SMOLT/GLACE BAY				
0021	PEI, INTEGRATED AQUATICS	1990	20000	FING	NS, NOVA AQUA SEA LTD/GLACE BAY				
0022	PEI, BROOKVALLEY MARINE	1990	2000	FING	NS, NOVA AQUA SMOLT/GLACE BAY				
0023	ONT, SPRING VALLEY H, PETERSBURG	1990	150000	EGGS	NS, LITTLE HARB TROUT FARM/PICTOU				
0024	ONT, RAINBOW SPRINGS HATCHERY	1990	3000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
0025	PEI, BROOKVALLEY MARINE	1990	46000	FING	NS, LOCH BRAS D'OR SALMON				
0026	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	TR EGGS	NS, SUGAR LOAF FISH FARM/OXFORD				
0027	ONT, SPRING VALLEY H, PETERSBURG	1990	100000	EGGS	NS, FRASERS MILLS H/ ST ANDREWS				
1001	ONT, RAINBOW SPRINGS H,THAMESFORD	1991	75000	EGGS	NS, SUGAR LOAF FISH FARM/OXFORD				
1002	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	25000	EGGS	NS, R PHILIP TROUT FARM/OXFORD				
1003	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	5000	EGGS	NS, ENVIRONMENT CANADA/DARTMOUTH				
1004	ONT, AQUAFARMS CANADA,FEVERSHAM	1991	20000	FING	NS, MERLIN FARMS/WENTWORTH VALLEY				
1006	QUE, PISCICULTURE ALLE/ST PHILEMON	1991	150000	EGGS	NS, MERLIN FISH FARMS/WENTWORTH V				
1007	PEI, BROOK VALLEY MARINE	1991	5000	FING	NS, R PHILIP TROUT FARM/OXFORD				
1008	PEI, BROOK VALLEY MARINE	1991	12600	FING	NS, R PHILIP TROUT FARM/OXFORD				
1009	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	2000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
1010	PEI, BROOK VALLEY MARINE	1991	18000	FING	NS, SUGARLOAF FISH FARM				
1011	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	1000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
1012	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	50000	EGGS	NS, SUGARLOAF FISH FARM				
1013	ONT, SPRING VALLEY H, PETERSBURG	1991	125000	EGGS	NS, LITTLE HARBOUR FARM/PICTOU				
1014	ONT, RAINBOW SPRINGS H,THAMESFORD	1991	100000	EGGS	NS, LITTLE HARBOUR FARM/PICTOU				
1015	ONT, AQUAFARMS CANADA,FEVERSHAM	1991	85000	FING	NS, ST PETERS HATCHERY/ST PETERS				
1016	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	2500	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT] (continued)									
1017	MT, ENNIS NATIONAL F HATCHERY	1991	250000	EGGS	NS, DFO FRASERS MILLS HATCHERY				
1018	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	3000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
1019	PEI, BROOK VALLEY MARINE,SOURIS	1991	4000	FING	NS, SUGARLOAF FISH H/WENTWORTH				
2025	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	50000	EGGS	NS, SUGARLOAF FISH H/WENTWORTH				
2029	ONT, AQUAFARMS CANADA,FEVERSHAM	1992	50000	EGGS	NS, SALMONID PROPAGATION ASSOC/ST PETERS				
2030	SASK,ARCTIC FISH CO, WALDHEIM	1992	100000	EGGS	NS, SPA COOP/ST PETERS				
2032	NB, GREENACRES TROUT H/GRANDE-DIQUE	1992	10000	FISH	NS, SUGARLOAF FISH HATCHERY/OXFORD				
2033	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	3000	FISH	NS, ENVIRONMENT CANADA, EPS/DARTMOUTH				
2034	ONT, AQUAFARMS CANADA,FEVERSHAM	1992	50000	EGGS	NS, SALMONID PROPAGATION ASSOC/ST PETERS				
2036	QUE, PISCICULTURE ALLEGHANYS	1992	50000	EGGS	NS, SUGARLOAF FISH FARM/OXFORD				
2039	QUE, PISCICULTURE ALLEGHANYS	1992	100000	EGGS	NS, SALMONID PROPAGATION ASSOC/ST PETERS				
2040	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	3000	FISH	NS, ENVIRONMENT CANADA, EPS/DARTMOUTH				
2042	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	25000	EGGS	NS, LITTLE HARBOUR TROUT FARM/TRENTON				
2043	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	1000	FISH	NS, HARRIS INDUSTRIAL/MILFORD STATION				
2045	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	2000	FISH	NS, ENVIRONMENT CANADA, EPS/DARTMOUTH				
2046	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	1000	FISH	NS, HARRIS INDUSTRIAL/MILFORD STATION				
2047	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	100000	EGGS	NS, SUGAR LOAF FF/OXFORD				
2048	ONT, SPRING VALLEY HATCHERY, PETERSBURG	1992	100000	EGGS	NS, W STRICKLAND/TRENTON				
2049	ONT, SPRING VALLEY HATCHERY, PETERSBURG	1992	100000	EGGS	NS, FRASER MILLS H/ST ANDREWS				
2050	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	1000	FISH	NS, HARRIS INDUSTRIAL/MILFORD STATION				
2051	ONT, SPRING VALEY HATCHERY, PETERSBURG	1992	50000	EGGS	NS, W STRICKLAND/TRENTON				
2052	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	2000	FISH	NS, HARRIS INDUSTRIAL/MILFORD STATION				
2053	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	75000	EGGS	NS, LITTLE HARBOUR TF/TRENTON				
2055	ONT, RAINBOW SPRINGS H, THAMESFORD	1992	25000	EGGS	NS, SUGAR LOAF FF/OXFORD				
SALMO SALAR [ATLANTIC SALMON]									
8004	NB, HUNTSMAN MARINE LAB (SJR C)	1988	50000	FRY	NS, NOVA AQUA SMOLT				(AQUACULTURE)
8003	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	1988	50000	EGGS	NS, DFO/COLDBROOK FCS (REARING)	P			(AQUACULTURE BROODSTOCK)
9012	NB, MACTAQUAC FCS	1989	50000	EGGS	NS, DFO/COLDBROOK FCS (REARING)	P			(AQUACULTURE BROODSTOCK)
9013	, AQUA VENTURES	1989	100000	EGGS	NS, NOVA AQUA SMOLT (EXPERIMENTAL)				GLACE BAY
9006	NB, CHAMCOOK	1989	50000	FING	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
0028	NB, BRIDEN ASSOCIATION & SEA FARMS	1990	72000	FING	NS, NOVA AQUA SMOLT (EXPERIMENTAL)				GLACE BAY
0029	NB, SEA FARMS CANADA, SPRINGDALE	1990	130000	SAC FRY	NS, NOVA AQUA SMOLT (QUARANTINE)				GLACE BAY (EXPERIMENTAL)
1021	NB, ASF CHAMCOOK	1991	270	PARR	NS, MARINE GENE LAB,DALHOUSIE UNIV				OUT OF QUARANTINE
1022	QUE, BAIE DES CHALEURS,ST OMER	1991	180	PARR 0+	NS, DFO HALIFAX LAB				OUT OF QUARANTINE
2060	NB, FUNDY AQUACULTURE, GRAND MANAN	1992	200000	EGGS	NS, SCOTIA SALMON FARMS/WEYMOUTH				
2061	NB, HARBOUR DELOUTRE, CAMPOBELLO IS	1992	250000	EGGS	NS, FRASER MILLS HATCHERY/ST ANDREWS				
SALMO SALAR [LANDLOCKED ATLANTIC SALMON]									
8005	ME, GRAND LAKE STREAM HATCHERY	1988	25000	EGGS	NS, M MULLEN/WEYMOUTH (REARING)				BEAR RIVER (AQUACULTURE)
9002	ME, GRAND LAKE STREAM HATCHERY	1989	50000	EGGS	NS, FRASERS MILLS HATCHERY				

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS ALPINUS [ARCTIC CHAR]									
8001	MAN, ROCKWOOD HATCHERY	1988	1600	EGGS	NS, NOVA AQUA SMOLT	P			GLACE BAY (AQUACULTURE)
9001	MAN, ROCKWOOD HATCHERY	1989	3000	EGGS	NS, SALMONID PROPAGATION ASSOC LTD				ST PETERS
9003	MAN, ROCKWOOD HATCHERY	1989	5000	EGGS	NS, MICMAC SMOLTS				WEYMOUTH
9014	NB, PURTILL, SUSSEX	1989	10000	EGGS	NS, BRAS D'OR SALMON (TEST)				LITTLE NARROWS
9015	NB, PURTILL, SUSSEX	1989	10000	EGGS	NS, SPA CO-OP (EXPERIMENTAL)				ST PETERS
0030	NB, PURTILL, SUSSEX	1990	8000	FRY	NS, SALMONID PROPAGATION ASSOC LTD				ST PETERS (EXPERIMENTAL)
0031	NB, PURTILL, SUSSEX	1990	5000	FRY	NS, LOCH BRAS D'OR SALMON				BADDECK (EXPERIMENTAL)
1020	PEI, INTEGRATED AQUATIC,CHAR QUARANTINE	1991	4500	FING	NS, SALMONID PROPAGATION ASSOC LTD				ST PETERS
2064	NB, GREEN ACRES TROUT, GRANDE-DIQUE	1992	30000	FISH	NS, SALMONID PROPAGATION ASSOC LTD				ST PETERS
2065	PEI, BROOK VALLEY MARINE FARM, SOURIS	1992	10000	EGGS	NS, SALMONID PROPAGATION ASSOC LTD				ST PETERS
SALVELINUS FONTINALIS [BROOK TROUT]									
8002	ME, PHILLIPS HATCHERY	1988	100000	EGGS	NS, NSDF/FRASERS MILLS H (REARING)	P			VARIOUS WATERS (STOCKING)
1023	NB, GREENACRES TROUT H,GRAND DIGUE	1991	400	3" 4"	NS, LARRY PEDERSON/AMHERST				
2081	QUE, PISCICULTURE ALLEGHANYS	1992	50000	EGGS	NS, MERLIN FF/WENTWORTH VALLEY				
2082	PEI, BROOK VALLEY MARINE FARM, SOURIS	1992	10000	EGGS	NS, C&G TROUT FARMS/MIDDLETON				
ONCORHYNCHUS KISUTCH [COHO SALMON]									
2085	ID, AQUA LIFE CORP, FALL CREEK	1992		ADULT	NS, SEABRIGHT SMOKEHOUSE LTD/TANTALLON				
2086	ID, AQUA LIFE CORP, FALL CREEK	1992		ADULT	NS, SEABRIGHT SMOKEHOUSE LTD/TANTALLON				
2087	ID, AQUA LIFE CORP, BUHL	1992		ADULT	NS, SEABRIGHT SMOKEHOUSE LTD/TANTALLON				

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

ONTARIO

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
8004	IN, MIXSABAH HATCHERY (/SKAMANIA)	1988	56000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1988	30000	FING	SEE NEXT LINE
8004					ONT, NORMANDALE HATCHERY	1989	25000	YEAR	GEORGIAN BAY (RESTORATION)
8006	MAN, ROCKWOOD HATCHERY (DOM/TAGWERKER)	1988	25000	E EGGS	ONT, PINE VALLEY HATCHERY (QUAR)	1989	?	YEAR	PRIVATE POND (AQUACULTURE)
9005	IN, TWIN BRANCH H (LK MICHIGAN/SKAM)	1989	80000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1989	35000	FING	SEE NEXT LINE
9005					ONT, NORMANDALE HATCHERY	1990	31000	YEAR	GEORGIAN BAY (RESTORATION)
0002	IN, TWIN BRANCH H (LK MICHIGAN/SKAM)	*1990	115000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1990	45000	FING	SEE NEXT LINE
0002					ONT, NORMANDALE HATCHERY	1991	35000	YEAR	GEORGIAN BAY (RESTORATION)
1002	WA, BEITEYS RESORT (DOMESTIC SP RUN)	*1991	70000	E EGGS	ONT, OMNR/ALMA HATCHERY (QUAR)	1992	45000	FING	(PRIVATE AQUACULTURE)
2002	WA, BEITEYS RESORT (DOMESTIC SP RUN)	1992	70000	E EGGS	ONT, U OF GUELPH(ALMA QUAR FAC)	P1992	50000	FING	PRIVATE SECTOR (VARIOUS)
SALMO SALAR [ATLANTIC SALMON]									
7010	NS, COLDBROOK FCS (LAHAVE RIVER)	*1987	50000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1988	35000	FING	SEE NEXT LINE
7010					NORMANDALE HATCHERY	1989	27000	YEAR	LK ONTARIO (RESTORATION)
7003	ME, GREEN LK H (PENOBSCOT RIVER)	*1987	58000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987	35000	FING	SEE NEXT LINE
7003					NORMANDALE HATCHERY	1988	27000	YEAR	LK ONTARIO (RESTORATION)
7002	SCO, ALLT MOR HATCHERY (LOCAL RIVER)	*1987	35000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987			SEE NEXT LINE
7002					NORMANDALE HATCHERY	1987	25000	FING	(PRIVATE AQUACULTURE)
7011	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	*1987	35000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987			SEE NEXT LINE
7011					NORMANDALE HATCHERY	1988	32000	YEAR	(PRIVATE AQUACULTURE)
1003	NS, MERSEY HATCHERY	*1987	800	FING	ONT, ONTARIO HYDRO (RESEARCH)	1988			STOCK DESTROYED
8011	NS, COLDBROOK FCS (LAHAVE RIVER)	*1988	61000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1989		FING	SEE NEXT LINE
8011					NORMANDALE HATCHERY	1990	32000	YEAR	LK ONTARIO (RESTORATION)
9001	NS, COLDBROOK FCS (LAHAVE RIVER)	*1989	60000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1990	40500	FING	SEE NEXT LINE
9001					NORMANDALE HATCHERY	1991	36000	YEAR	LK ONTARIO (RESTORATION)
9001					NORMANDALE HATCHERY	1991	4500	YEAR	INLAND RESTORATION
0003	NS, COLDBROOK FCS (LAHAVE RIVER)	*1990	80000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1991	35000	FING	SEE NEXT LINE
0003					NORMANDALE HATCHERY	P1992	32000	YEAR	LK ONTARIO (RESTORATION)
1004	NS, COLDBROOK FCS (LAHAVE RIVER)	1991	60000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1992	50000	FING	SEE NEXT LINE
1004					RINGWOOD FCS	P1993	45000	YEAR	LK ONTARIO (RESTORATION)
2001	NB, ST ANDREWS RESEARCH STA(UNKNOWN)	1991	40000	EGGS	UNIVERSITY OF GUELPH(RESEARCH)	1992	40000	SAC FRY	DESTROYED
2004	NS, COLDBROOK HAT (LAHAVE RIVER)	P1992	80000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1993	50000	FING	RINGWOOD FCS
2004					OMNR LAKE ONTARIO	P1994		YEAR	REHAB STOCKING
SALMO SALAR [LANDLOCKED ATLANTIC SALMON]									
6002	NY, ADIRONDACK H (LITTLE CLEAR POND)	*1986	3400	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987			SEE NEXT LINE
6002					NORMANDALE HATCHERY	1987	1000	SMOLTS	LK ONTARIO (RESTORATION)
8005	ME, GRAND LK STREAM H (WEST GRAND LK)	*1988	75000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1988		FING	SEE NEXT LINE
8005					NORMANDALE HATCHERY	1989	58000	YEAR	LK ONTARIO (RESTORATION)
9002	ME, GRAND LK STREAM H (WEST GRAND LK)	1989	63000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1989		FING	SEE NEXT LINE
9002					NORMANDALE HATCHERY	1989	52000	YEAR	LK ONTARIO (RESTORATION)
0006	ME, GRAND LK STREAM H (WEST GRAND LK)	*1990	110000	E EGGS	ONT, OMNR/NORMANDALE & ALMA (QUAR)	1990	81000	FING	SEE NEXT 2 LINES
0006					NORMANDALE & ALMA HATCHERIES	1991	31000	YEAR	(REHABILITATION STOCKING)
0006					NORMANDALE & ALMA HATCHERIES	1991	24000	YEAR	BROODSTOCK DEV

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS ALPINUS [ARCTIC CHAR]									
7007	NB, HUNTSMAN MARINE LABORATORY	1987	30	FING	ONT, SIR WILFRED U (RESEARCH)				STOCK DESTROYED
7009	ICE, UNIVERSITY OF ICELAND	1987	3000	EGGS	ONT, U OF GUELPH (RESEARCH)				STOCK DESTROYED
7006	NB, HUNTSMAN MARINE LABORATORY	1987	200	FING	ONT, U OF GUELPH (RESEARCH)				STOCK DESTROYED
8009	ICE, U OF ICELAND (THINGVALLAVATN LK)	1988	2000	EGGS	ONT, U OF GUELPH (RESEARCH)				STOCK DESTROYED
8007	MAN, ROCKWOOD H (FRASER R, LAB)	*1988	5000	E EGGS	ONT, PINE VALLEY HATCHERY (QUAR)	1989	3500		COLD WATER H (PRIVATE AQC)
9006	MAN, ROCKWOOD H (FRASER R, LAB)	*1989	5000	E EGGS	ONT, ONTARIO VET COLLEGE (AQC DEV)				ALL FISH DIED
9003	MAN, ROCKWOOD H (FRASER R, LAB)	*1989	30000	E EGGS	ONT, COLDWATER & ALMA H (QUAR)	P1990	20000	FING	(PRIVATE AQC BROODSTOCK)
0001	MAN, ROCKWOOD HATCHERY (VARIOUS\)	*1990	67000	E EGGS	ONT, OMNR/COLDWATER & ALMA H (QUAR)	1991	30000	FING	(PRIVATE AQUACULTURE)
1001	MAN, ROCKWOOD HATCHERY (VARIOUS\)	*1991	68800	E EGGS	ONT, COLDWATER & ALMA H (QUAR)	P1992			SEE NEXT 2 LINES
1001					COLDWATER & ALMA HATCHERIES	P1992		FING	(AQC BROODSTOCK)
1001					COLDWATER & ALMA HATCHERIES	P1992		FING	(AQC BROODSTOCK)
2005	MAN, ROCKWOOD HATCHERY(VARIOUS)	P1992	50000	E EGGS	U OF GUELPH (ALMA QUAR UNIT)	P1993			SEE NEXT LINE
2005						P1993	40000	FING	PRIVATE SECT (BROODSTOCK DEV)
SALVELINUS FONTINALIS X SALVELINUS ALPINUS [CHARBROOK]									
8008	QUE, SILVER SPRINGS HATCHERY	1988	500	FISH	ONT, U OF OTTAWA (RESEARCH)				INCINERATED
SALVELINUS NAMAYCUSH [LAKE TROUT]									
1005	NY, SENECA LAKE (SENECA LAKE/WILD)	*1990	70000	G EGGS	ONT, OMNR/NORMANDALE QUAR UNIT	1991	65000	FING	SEE NEXT LINE
1005					WHITE LAKE HATCHERY	P1992	51000	YEAR	LK ONTARIO (REHABILITATION)
1005					LAKE ONTARIO	P1992	14000	YEAR	BROODSTOCK DEV
1006	NY, SENECA LAKE (SENECA LAKE/WILD)	1991	70000	G EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1992	60000	FING	SEE NEXT LINE
1006					WHITE LAKE HATCHERY	P1993	50000	YEAR	LK ONTARIO (REHAB & BRD STOCK)
2003	NY, SENECA LAKE(SENECA LAKE /WILD)	P1992	70000	G EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1993	60000	FING	SEE NEXT LINE
2003					NORMANDALE FCS	P1994	50000	YEAR	REHAB & BROODSTOCK DEV

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

PRINCE EDWARD ISLAND

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS KISUTCH [COHO SALMON]									
9017	BC, PRIVATE AQUACULTURE FACILITY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0009	BC, CHILLIWACK RIVER HATCHERY	1990	40000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
1008	BC, BIG QUALICUM HATCHERY	1991	40000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2013	BC, BIG QUALICUM HATCHERY	1992	50000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
	ONT, RAINBOW SPRINGS HATCHERY	1986	50000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREDALBANE (AQUACULTURE)
7004	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	FING	PEI, SILVER SEA AQUACULTURE				LITTLE YORK (AQUACULTURE)
7007	ONT, AQUAFARMS CANADA	1987	25000	FING	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
7003	ONT, RAINBOW SPRINGS HATCHERY	1987	100000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
7002	ONT, RAINBOW SPRINGS HATCHERY	1987	100000	EGGS	PEI, INTEGRATED AQUATIC SYSTEMS				BROOKVALE (AQUACULTURE)
7011	ONT, RAINBOW SPRINGS HATCHERY	1987	75000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
7010	ONT, VAN AQUA INC	1987	250000	EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
7009	QUE, PISCICULTURE ALLEGHANYS	1987	15000	FING	PEI, EDWARD MURPHY				KENSINGTON (AQUACULTURE)
7008	WA, BEITEYS RESORT	1987	200000	FING	PEI, INTEGRATED AQUATIC SYSTEMS				BROOKVALE (AQUACULTURE)
7001	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
7005	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	FING	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
7012	ONT, AQUAFARMS CANADA	1988	30000	EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
8001	QUE, PISCICULTURE ALLEGHANYS	1988	50000	FING	PEI, EDWARD MURPHY (REARING)				HUNTER R (AQUACULTURE)
8002	WA, BEITEYS RESORT	1988	200000	EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
8003	WA, BEITEYS RESORT	1988	250000	EGGS	PEI, INTEGRATED AQUATICS (REARING)				BROOKVALE (AQUACULTURE)
8004	ONT, RAINBOW SPRINGS HATCHERY	1988	125000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				GLYNDE R (AQUACULTURE)
8005	ONT, RAINBOW SPRINGS HATCHERY	1988	25000	TR EGGS	PEI, GLYNDE RIVER AQUACULTURE				GLYNDE R (AQUACULTURE)
9001	ONT, RAINBOW SPRINGS HATCHERY	1989	25000	FING	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
9002	ONT, RAINBOW SPRINGS HATCHERY	1989	43500	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
9003	ONT, RAINBOW SPRINGS HATCHERY	1989	68500	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
9004	ONT, RAINBOW SPRINGS HATCHERY	1989	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9005	WA, BEITEYS RESORT	1989	24384	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9009	ONT, RAINBOW SPRINGS HATCHERY	1989	75000	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
9010	ONT, RAINBOW SPRINGS HATCHERY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0007	ONT, RAINBOW SPRINGS HATCHERY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0012	ONT, RAINBOW SPRINGS HATCHERY	1990	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0001	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	TR EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0002	ONT, RAINBOW SPRINGS HATCHERY	1990	165100	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0003	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	TR EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0004	ONT, RAINBOW SPRINGS HATCHERY	1990	200000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0005	ONT, RAINBOW SPRINGS HATCHERY	1990	100000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0006	WA, BEITEYS RESORT	1990	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				CHARLOTTETOWN (DESTROYED)
1001	QUE, PISCICULTURE ALLEGHANYS	1991	25000	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
1002	WA, BEITEYS RESORT	1991	20000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1003	QUE, PISCICULTURE ALLEGHANYS	1991	50000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
1004	NB, GREENACRES TROUT HATCHERY	1991	4000	FING	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1005	QUE, PISCICULTURE ALLEGHANYS	1991	10000	FING	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
1006	NB, GREENACRES TROUT HATCHERY	1991	1500	FING	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1007	NB, SEA FARMS (CANADA)	1991	40000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1019	NB, GREENACRES TROUT HATCHERY	1992	35000	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT] (continued)									
2014	QUE, PISCICULTURE ALLEGHANYS	1992	75000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
2015	NB, GREENACRES TROUT HATCHERY	1992	2000	FING	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2016	NB, GREENACRES TROUT HATCHERY	1992	4500	FING	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2017	NB, GREENACRES TROUT HATCHERY	1992	1000	FING	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2018	NB, GREENACRES TROUT HATCHERY	1992	20000	FING	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
2019	WA, BEITEYS RESORT	1992	10000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2054	ONT, RAINBOW SPRINGS HATCHERY	1992	65000	EGGS	PEI, BROOKVALLEY MARINE FARM/SOURIS				
SALVELINUS ALPINUS [ARCTIC CHAR]									
7013	MAN, ROCKWOOD HATCHERY	1987	5000	EGGS	PEI, ATL VETERINARY COLLEGE				
8006	NB, HUNTSMAN MARINE LABORATORY	1988	500	FING	PEI, INTEGRATED AQUATICS (REARING)				BROOKVALE (AQUACULTURE)
9006	NB, HML (FRASER R, LABRADOR)	1989	50000	E EGGS	PEI, IAS/BROOKVALE (QUARANTINE)	1989	45600	FING	BROOKVALE (AQUACULTURE)
9008	MAN, ROCKWOOD H (FRASER R, LABRADOR)	*1989	3000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (BROODSTOCK DEV)
0018	NB, PURTILL B FISH	1989	12000	E EGGS	PEI, IAS (EXP QUARANTINE PROGRAM)	1990	131397	FING	BROOKVALE (AQUACULTURE)
0019	NB, PURTILL B FISH	1990	88000	E EGGS	PEI, IAS (EXP QUARANTINE PROGRAM)				-RELEASED FROM
0020	NB, PURTILL B FISH	1990	15000	SAC FRY	PEI, IAS (EXP QUARANTINE PROGRAM)				QUARANTINE
0021	NB, PURTILL B FISH	1990	62000	SAC FRY	PEI, IAS (EXP QUARANTINE PROGRAM)				
SALVELINUS FONTINALIS [BROOK TROUT]									
7006	ONT, WILDCAT TROUT FARM	1987	20000	JUV	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
SALMO SALAR [ATLANTIC SALMON]									
8007	NB, HML (SAINT JOHN CULTURED)	1988	45000	FRY	PEI, ATL VET COLLEGE (REARING)				(AQUACULTURE)
9007	NB, BOF CAGE SITE (SAINT JOHN RIVER)	1989	50000	E EGGS	PEI, IAS/BROOKVALE (QUARANTINE)	1989	18300	FING	BROOKVALE (AQUACULTURE)
9011	NB, SEA FARMS CANADA	1989	2000	FRY	PEI, ATL VET COLLEGE (RESEARCH)				TO BE DESTROYED
9012	NB, HUNTSMAN MARINE LABORATORY	1989	1500	PYP	PEI, ATL VET COLLEGE (RESEARCH)				TO BE DESTROYED
9013	NB, SEA FARMS CANADA	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9014	NS, MERSEY FCS	1989	7500	FING	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9015	SCO, PRIVATE FACILITY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9016	NOR, PRIVATE AQUACULTURE FACILITY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0008	NS, COLDBROOK FCS	1989	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0022	NB, MIRAMICHI FCS (MIRAMICHI)	1989	70000	G EGGS	PEI, DFO/CARDIGAN FCS (QUAR)				PEI (ENHANCEMENT PROGRAMS)
0010	NB, SEA FARMS CANADA	1990	15000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0011	NB, SEA FARMS CANADA	1990	400	FING	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0013	SCO, MARINE HARVEST LIMITED	1990	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0014	NOR, JAKTA FISKEOPPDRETT AS	1990	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0015	ME, KENNEBEC AQUACULTURE	1990	2000	PARR	PEI, AQUA HEALTH (RESEARCH)				TO BE DESTROYED
0016	NB, SEA FARMS CANADA	1990	2050	FING	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0017	NB, SEA FARMS CANADA	1990	393	P SMOLT	PEI, AQUA HEALTH (RESEARCH)				TO BE DESTROYED
0023	NB, MIRAMICHI FCS (MIRAMICHI/NW)	1990	55000	G EGGS	PEI, DFO/CARDIGAN FCS (QUAR)				PEI (ENHANCEMENT PROGRAMS)
0024	NS, COLDBROOK FCS	1990	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0025	NB, SALMON DEMONSTRATION FARM	1990	250	1 Kg	PEI, ATL VET COLLEGE (RESEARCH)				TO BE DESTROYED
1009	ME, KENNEBEC AQUACULTURE	1991	2500	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1010	NB, SEA FARMS (CANADA)	1991	1600	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

PRINCE EDWARD ISLAND (continued)

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALMO SALAR [ATLANTIC SALMON] (continued)									
1011	NB, SEA FARMS (CANADA)	1991	5000	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1012	ME, KENNEBEC AQUACULTURE	1991	6000	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1013	NS, COLDBROOK FCS	1991	20000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1014	NB, SEA FARMS (CANADA)	1991	350	SMOLT	PEI, AVC (FISH HEALTH RESEARCH)				TO BE DESTROYED
1015	NB, SALMON DEMONSTRATION FARM	1991	350	P SMOLT	PEI, AVC (FISH HEALTH RESEARCH)				TO BE DESTROYED
1016	NB, SALMON DEMONSTRATION FARM	1991	60	ADULT	PEI, AVC (FISH HEALTH RESEARCH)				TO BE DESTROYED
1017	NH, NEW ENG FISH FARM ENT	1991	19000	FRY	PEI, BROOKVALLEY MARINE FARMS				SOURIS(BROODSTOCK DEV)
1018	NB, BRIDEN CONSULTANTS LTD	1991	10000	FRY	PEI, BROOKVALLEY MARINE FARMS				SOURIS(BROODSTOCK DEV)
2020	ME, KENNEBEC AQUACULTURE INC	1992	5000	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2021	NB, BRIDEN CONSULTANTS LTD	1992	30000	E EGGS	PEI, BROOKVALLEY (QUARANTINE)	1992	22000	FRY	SOURIS(BROODSTOCK DEV)
2022	NB, SEA FARMS (CANADA)	1992	9000	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2023	NS, MERSEY FCS	1992	10000	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
2024	ME, KENNEBEC AQUACULTURE INC	1992	125	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

QUEBEC

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
COREGONUS CLUPEAFORMIS [LAKE WHITEFISH]									
8004	ONT, WHITELAKE HATCHERY	1988	700	FING	LAVAL UNIVERSITY (RESEARCH)	P			TO BE DESTROYED
COREGONUS LAVARETUS [LAKE WHITEFISH]									
7003	FIN, (VAASA)	1987	150	G EGGS	LAVAL UNIVERSITY (RESEARCH)	P			TO BE DESTROYED
ONCORHYNCHUS KISUTCH [COHO SALMON]									
7001	BC, ROSEWALD CREEK HATCHERY	1987	150	JUV	LAVAL UNIVERSITY (RESEARCH)	P			TO BE DESTROYED
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
7002	ONT, AQUAFARMS CANADA	1987	50000	EGGS	QUE, BILL NOWELL				(AQUACULTURE)
8001	PEI, GLYNDE RIVER AQUACULTURE	1988	80000	FING	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
8002	ONT, REDBOW FARMS	1988	80000	FING	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
8003	ONT, ABERFOYLE FISHERIES	1988	80000	FING	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
8005	ONT, SPRING VALLEY HATCHERY	1988	600000	EGGS	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
9007	ONT, AQUAFARMS CANADA (DOMESTIC)	1988	100000	EGGS	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
9003	ONT, SPRING VALLEY H (DOMESTIC)	1989	100000	FRY	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
9008	ONT, SPRING VALLEY H (DOMESTIC)	1989	1000000	EGGS	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
0001	ONT, WILDCAT TROUT FARM	1990	40000	FRY	QUE, SALMONID INC/HATCHERY				(AQUACULTURE)
1001	ONT, RAINBOW SPRING HATCHERY	1991	1000	FRY	QUE, ANALEX INC/LAB				BIOASSAY
1002	ONT, RAINBOW SPRING HATCHERY	1991	1000	FRY	QUE, CONSULTANTS BEAK LTEE/LAB				BIOASSAY
1003	ONT, RAINBOW SPRING HATCHERY	1991	1000	FRY	QUE, LAB. CENTRE ST-LAURENT				BIOASSAY
2087	ONT, RAINBOW SPRING HATCHERY	1992	1000	FRY	QUE, ANALEX INC/LAB				BIOASSAY
2088	ONT, RAINBOW SPRING HATCHERY	1992	150000	EGGS	QUE, FERME ST MATHIEU				(AQUACULTURE)
2089	NY, HINCHENBROOKE HATCHERY	1992	350	YEAR	QUE, GRAHAM FLOWERS/FISH POND				STOCKING
2090	NY, HINCHENBROOKE HATCHERY	1992	450	YEAR	QUE, S. LEGER/FISH POND				STOCKING
2091	NY, HINCHENBROOKE HATCHERY	1992	550	YEAR	QUE, FRED FARQUHAR/FISH POND				STOCKING
2092	NY, HINCHENBROOKE HATCHERY	1992	500	YEAR	QUE, GEORGE DAIGLE/FISH POND				STOCKING
2093	ONT, RAINBOW SPRING HATCHERY	1992	9150	FRY	QUE, CONSULTANTS BEAK LTEE/LAB				
2094	ONT, RAINBOW SPRING HATCHERY	1992	2000	FRY	QUE, CONSULTANTS BEAK LTEE/LAB				BIOASSAY
SALMO SALAR [ATLANTIC SALMON]									
0005	NB, SEA FARMS, DIGDEGUASH	1990	?	SMOLTS	QUE, BAIE DES CHALEURS AQC				(AQUACULTURE)
1004	NB, KELLY COVE BROODSTOCK	1991	60000	EGGS	QUE, BAIE DES CHALEURS AQC				(AQUACULTURE)
SALVELINUS ALPINUS [ARCTIC CHAR]									
9002	MAN, ROCKWOOD HATCHERY (WILD)	1989	20000	FRY	QUE, INRS/RIMOUSKI (RESEARCH)				
9005	MAN, ROCKWOOD HATCHERY (WILD)	1989	5000	EGGS	QUE, J P THONNEY HATCHERY				(AQUACULTURE)
9006	MAN, ROCKWOOD HATCHERY (WILD)	1989	5000	EGGS	QUE, RECHERCHE LA PETITE NATION				(AQUACULTURE)
0002	BC, SUN VALLEY TROUT FARM	1990	15000	EGGS	QUE, PISCICULTURE ALLEGHANYS				
0003	BC, SUN VALLEY TROUT FARM	1990	12000	EGGS	QUE, INRS/RIMOUSKI (RESEARCH)				
0004	MAN, ROCKWOOD HATCHERY	1990	15000	EGGS	QUE, MAPA (RESEARCH)				
1005	NB, GREENACRES TROUT HATCHERY	1991	3000	EGGS	QUE, INSTITUT TECHNOLOGIE AGRICOLE				RESEARCH

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS ALPINUS [ARCTIC CHAR] (continued)									
1006	NB, GREENACRES TROUT HATCHERY	1991	15000	EGGS	QUE, PISCICULTURE ALLEGHANYS				(AQUACULTURE)
1007	MAN, WILDWOOD TROUT FARM	1991	13000	EGGS	QUE, MAPA (RESEARCH)				RESEARCH
2095	NB, GREENACRES TROUT HATCHERY	1992	3000	EGGS	QUE, MAPAC				(RESEARCH)
2096	NB, GREENACRES TROUT HATCHERY	1992	3000	FRY	QUE, FERME ST MATHIEU				(AQUACULTURE)
2097	NB, GREENACRES TROUT HATCHERY	1992	15000	EGGS	QUE, PISCICULTURE ALLEGHANYS				(AQUACULTURE)
SALVELINUS FONTINALIS [BROOK TROUT]									
9001	ONT, THISTLE SPRINGS FARM (DOMESTIC)	1989	2000	YEAR	QUE, CENTRE DE PECHE BLAINVILLE				(POND FISHING)
9004	ME, PHILLIPS HATCHERY (DOMESTIC)	1989	10000	FRY	QUE, (HOLDING PRIOR TO STOCKING ?)	1989	10000	FRY	SJR, MAINE (STOCKING)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1992

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS [RAINBOW TROUT]									
6001	WA, TROUT LODGE (UNKNOWN)	1986	150000	EGGS	RI,	1988?		2+	STATEWIDE (STOCKING)
7001	WA, TROUT LODGE (UNKNOWN)	1987	150000	EGGS	RI,	P1989?	2+		STATEWIDE (STOCKING)
SALMO SALAR [ATLANTIC SALMON]									
2100	ME, KENNEBEC H (PEN-ST JOHN)	1992	20300	PARR	RI, RIDFW	1992	20300	PARR	PAWCATUCK R (RESTORATION)
2101	RI, PERRIVILE H (PAWCATUCK R)	1992	5000	PARR	RI, RIDFW	1992	5000	PARR	PAWCATUCK R (RESTORATION)
2102	MA, N ATTLEBORO H (MERRIMAC R)	1992	2500	SMOLT	RI, RIDFW	1992	2500	SMOLT	BEAVER RIVER (URI RESEARCH)
2103	MA, N ATTLEBORO H (MERRIMAC R)	1992	45500	PARR	RI, RIDFW	1992	45500	PARR	PAWCATUCK R (RESTORATION)
2104	NH, NASHUA H (MERRIMAC R)	1992	5000	P/S	RI, RIDFW	1992	5000	P/S	PAWCATUCK R (RESTORATION)
2105	NH, NEFFI, (PENOBSCOT)	1992	250000	E EGGS	RI, RIDFW	1992	250000	E EGGS	PAWCATUCK R (RESTORATION)

NAC(93)6

IMPACT OF ACID RAIN ON ATLANTIC SALMON

1. At its Ninth Annual Meeting in Montreal the Commission requested that the Secretary contact the Air Quality Committee of the Canada-US Air Quality Agreement to seek a response to the following questions:

   (a) How effective (and within what timeframe) are the SO_2 emission control programs of Canada and the United States expected to be in promoting a return to naturally occurring pH levels in affected Atlantic salmon watersheds of eastern Canada and the United States?

   (b) What are the principal sources of SO_2 emissions affecting the Southern Upland area of Nova Scotia, where many Atlantic salmon stocks have been eliminated as a result of pH reductions?

2. In accordance with this request I wrote to the Co-Chairmen, Mr Peter Higgins (Canada) and Mr Richard Smith (USA), on 21 April 1992. A reply was received from the US (Annex 1) and was presented to the Commission at its meeting in Washington DC last year. Following consideration of this response the Commission recommended further consultations with the Co-Chairs with a view to holding a Working Group meeting of atmospheric and fisheries scientists from the US and Canada to develop a complete response to these questions. It was agreed that the report of this meeting should be made available to the Commission at its next annual meeting.

3. Following the Washington meeting a response to the questions was received from Canada (Annex 2) and this was transmitted to Heads of Delegations of NAC on 9 October, with a request for clarification as to how to proceed with setting up the Working Group. In particular, the Commission's views as to whether the Working Group should be under the auspices of the NAC or the Air Quality Committee were requested. It was clear from the response received that consultations between the Parties on this question were required and the Commission may therefore wish to consider this issue at its meeting and decide how to proceed.

Secretary
Edinburgh
21 May 1993

ANNEX 5

NORTH AMERICAN COMMISSION

NAC(93)6

IMPACT OF ACID RAIN ON ATLANTIC SALMON

NORTH AMERICAN COMMISSION

NAC(93)13

STATUS OF ATLANTIC SALMON STOCKS IN THE UNITED STATES OF AMERICA IN 1992

NAC(93)13

STATUS OF ATLANTIC SALMON STOCKS IN THE UNITED STATES OF AMERICA IN 1992

1. INTRODUCTION

The Atlantic salmon resource in the United States of America consists of self-sustaining runs and specific stocks in the process of restoration. No commercial fishery for Atlantic salmon exists in US waters. However, a managed recreational fishery occurs in several river systems. Atlantic salmon stocks are assessed by the analysis of sport fishery catches, adult counts on monitored rivers, marine and freshwater tag returns, and scientific collections of juvenile fish. The material presented here is abstracted from the 1993 report of the US Atlantic Salmon Assessment Committee.

The United States is dedicated to the restoration of Atlantic salmon to its native habitat. The rivers of the northeastern states once produced large Atlantic salmon runs estimated to have numbered in the tens of thousands each year. Prime examples are the river systems under restoration: the Connecticut, Merrimack and Penobscot rivers, which likely produced runs in excess of 100,000, 30,000, and 80,000. Industrialization during the 1800's made spawning habitat inaccessible and reduced water quality in these rivers. Nevertheless, in recent years, under great expense, tremendous strides have been made to reverse these conditions and return Atlantic salmon to their historical habitat.

Restoration has involved a great investment in fish passage at dams, improvement of riverine water quality, and the development of an extensive hatchery system to reintroduce the fish where previously extirpated. The installation of state-of-the-art fish passage and fish guidance systems is a continuing process of making salmon spawning habitat available to adult fish and providing safe passage for smolts on their way to the sea. Legislated improvements in water quality have made habitat more suitable to all Atlantic salmon life stages including the fry and parr. The hatchery system involves numerous facilities that maintain Atlantic salmon broodstock and raise juvenile salmon for stocking.

2. THE SPORT FISHERY

Maine's documented 1992 Atlantic salmon sport fishery catch increased 26% from 1991, but represented a decrease from 1990 (Table 1). The decrease in catch has been attributed to smaller salmon runs. As in previous years, the number of Atlantic salmon caught and released was substantially higher than the number retained. In 1992, 407 fish were released out of a total angling catch of 600.

Historically, the exploitation rate in Maine rivers varied from 0% to about 25% averaging around 13%. The exploitation rate in the Penobscot River, which supports the largest Atlantic salmon sport fishery in the USA, has varied with changing fish abundance and regulations (Figure 1). With the increase in stocking and large runs of the late 1970's, the exploitation rate in the Penobscot increased from levels of approximately 6% to higher exploitation of approximately 21%. With recent

regulations designed to reduce catch, exploitation has decreased to approximately 10% in recent years. A statewide limit on fish kept was reduced from five to one salmon beginning in 1992. On the Penobscot River, this change may have contributed to an observed decline in exploitation to 6.8%.

Historical trends in total catch for the Penobscot and other Maine rivers show the dominance of the Penobscot River fishery since 1980 (Figure 2). Sport catch in all US rivers is typically dominated by 2 sea-winter (SW) Atlantic salmon. Rivers with self-sustaining stocks continue to show a decline in their sport fishery catches. Catches of 2SW wild origin salmon (identified by scale reading) decreased in these rivers during 1992 and are still well below the long term average (Figure 3).

3. STOCKING OF JUVENILE SALMON

Over 6 million juvenile Atlantic salmon were released into US rivers in 1992 (Figure 4). This represents the fifth consecutive year that total hatchery output for Atlantic salmon restoration in the USA has exceeded 5 million fish. The Penobscot, Merrimack, and Connecticut Rivers continue to be the target restoration sites accounting for over 97% of the stocked fish. Fry stocking has been increased in these rivers reflecting the shift in emphasis towards this stocking strategy.

Parr and smolts continued to be tagged with Carlin and coded wire tags (Figure 5). Carlin tags were applied to 50,000 smolts released into the Penobscot River in 1992. In 1992, coded wire tags were applied to smolts released into the Penobscot (201,100), Merrimack (96,400) and Connecticut (313,300) Rivers. An additional 12,800 parr received coded wire tags, bringing the 1992 total to 673,600 tagged Atlantic salmon released.

Carlin tags have been used on Connecticut River Atlantic salmon stocks and various stocks in Maine. Large tagging experiments with Maine origin smolts began in 1966.

Following early research on tagging methods using both juvenile and adult releases, recent tagging studies have been conducted with smolts from the Penobscot River. Historically, between 25,000 and 100,000 Carlin tagged fish were released annually with the exception of a suspension of Carlin tagging in 1978. Carlin tags were also applied to Connecticut River smolts in the early 1970's and later from 1984-1988. Since 1989, a total of 50,000 Carlin tagged fish have been released each year. All of these fish have been released in Maine rivers.

Coded wire tags were first used on Connecticut River stocks to evaluate broodstock performance and were not intended for distant water recovery. However, starting in 1985, tags were applied to Connecticut and Merrimack River Atlantic salmon with target recoveries in Greenland and Canada commercial Atlantic salmon fisheries. Coded wire tags were first used in Penobscot River fish in 1986.

4. RUN SIZE AND ESCAPEMENT

Atlantic salmon runs for Maine rivers were estimated by the ICES Working Group Model which integrated estimated returns for rivers with and without trapping facilities (Figure 6). The estimated run of 1SW Atlantic salmon has increased since the early

1970's which probably reflects increased stocking activities in the state of Maine. Two distinct peaks of abundance have occurred in 1SW returns, one in 1980-81 and the other since 1987. The estimated run of 2SW salmon has not shown this trend. Returns of 2SW Atlantic salmon have shown a declining trend since the early 1980's. Despite these trends, the run of 2SW Atlantic salmon still dominates total Maine returns. The estimated run of 3SW salmon shows a steady pattern of decline and appears to be unaffected by increased restoration efforts.

Run estimates for the Merrimack and Connecticut rivers are based solely on trap counts since no salmon fishing is allowed in these rivers (Figure 7). Total run sizes in 1992 were 199 and 490 in the Merrimack and Connecticut Rivers. Compared to 1991, these runs represent a 40% decline in the Merrimack River and a 140% increase in the Connecticut River. These restoration rivers have typically produced runs of less than 500 salmon each year.

The target run size for restoration of Atlantic salmon in the northeastern United States is in excess of 50,000 spawners each year. This target is based primarily on expected stock size for the major restoration river systems. Expectations are that the Connecticut River will produce in the range of 12,000 to 21,000 salmon each year, the Merrimack 5,000 to 7,000 salmon and the Penobscot River 10,000 to 15,000 salmon. These estimates are for both sexes and before exploitation by riverine recreational fisheries. Many smaller rivers make up the remainder. Natural spawning escapement occurs to varying degrees in all rivers. In wild run rivers, escapement is given by the number of fish in the run less the number removed in the sport fishery. In restoration rivers, a fraction of the run is taken as broodstock for the restoration program. For example, in the Penobscot River, the natural spawning escapement can number in the thousands of fish. In contrast, in the Merrimack and Connecticut rivers, a smaller fraction of the run is allowed to proceed upriver.

5. ATLANTIC SALMON RESEARCH PROGRAM HIGHLIGHTS, 1992

The research program for Atlantic salmon in the US is extensive in the areas of husbandry, ecology, and management of the species. Research is conducted by the National Marine Fisheries Service (NMFS), US Fish and Wildlife Service (USFWS), US Forest Service (USFS), National Parks Service (NPS), New England States, Native American tribes, private groups and universities. The cooperative efforts of state, federal, private and academic researchers are broadly organized by the three major restoration programs on the Connecticut, Merrimack and Penobscot rivers. Research is conducted on topics unique to individual rivers and of general interest to the international salmonid research community.

Connecticut River

Development of downstream fish passage systems continued on mainstem hydroelectric facilities. At Holyoke, the effectiveness of the louver array and conduit facility was tested with tagged hatchery smolts. At Turners Falls, diversion panels were constructed to move fish into a bypass sluice. In 1993, both Vernon and Bellows Falls facilities will be fitted with floating curtain walls. The Wilder Dam facility will provide passage by spillage during migration periods.

The USFS continued studies to enumerate stream reared smolts emigrating from selected Connecticut River tributaries. Studies on West River and Utley Brook found smolt outmigration to occur in May with a peak from May 9-13. Catches were considered low and the migration was later than expected. Sampling of Utley Brook for 14 days in October autumn yielded almost as many outmigrating fish as the spring sampling. Based upon size, 27% of these autumn migrants were presmolts. Given these results the USFS plans to expand autumn sampling to better document and assess the observed patterns.

Merrimack River

During 1992, a fish passage plan was developed to address the Essex Dam complex. A second plan will be developed in 1993 to address the Pawtucket Dam. In support of these plans, smolt studies on the Merrimack River continued in 1992. Smolt migration routes and timing are being studied under a number of different flow conditions to assess the efficiency of several passage facilities on the Merrimack, Pemigewasset, and Contoocook Rivers.

Research on the relationship between stocking densities and smolt production continues. Predictive models of smolt production are being developed that are linked to environmental and habitat variables. The goal of this work is to develop scientific guidelines for the efficient use of fry during stocking activities. The guidelines are expected to be drainage specific, but the general principals used should be applicable region wide.

Analysis of the scales of returning Atlantic salmon indicated differences in smolt size of fry stocked and smolt stocked fish. Stocked smolts ranged from 15 to 30 cm with the majority of fish exceeding 16 cm. Smolts stocked as fry ranged from 10 to 26 cm with the majority of fish ranging from 15 to 16 cm.

Maine Rivers

As a consequence of the continued decline of Atlantic salmon populations of rivers in Northeastern Maine, the US Fish and Wildlife Service and Atlantic Sea Run Salmon Commission developed a Pre-listing Recovery Plan (a set of remedial measures to facilitate the recovery of stocks). The plan outlines necessary goals, approaches, and resources to rehabilitate Atlantic salmon runs. In an effort to address declining runs and concerns of stock-specific management, the USFWS converted the Craig Brook National Fish Hatchery to a multiple broodstock fry production facility where broodstock are collected for each river. This will facilitate the production of river-specific stocks for fry to be released in these rivers.

The distribution of salmon fry into desired rearing habitat poses logistical challenges for restoration biologists. Fry must be moved in great numbers and under a variety of conditions to widely dispersed habitats. A new mobile bulk distribution system that provides a favorable environment for fry even during periods of hot weather was developed and utilized in 1992. This system reduced stocking time and facilitated the release of a record number of fry in the Penobscot drainage.

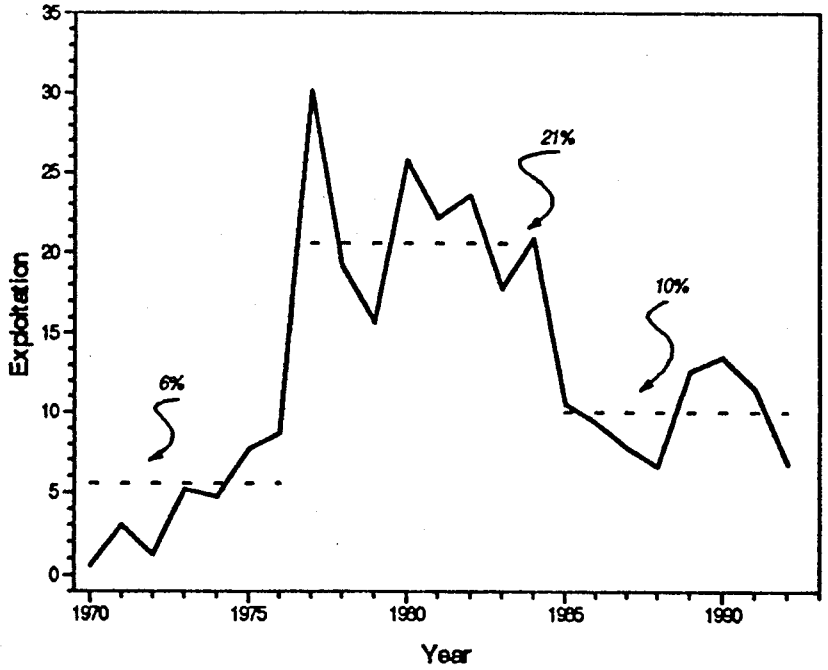


Figure 1. Sport fishery exploitation on Atlantic salmon on the Penobscot River, 1970-1992.

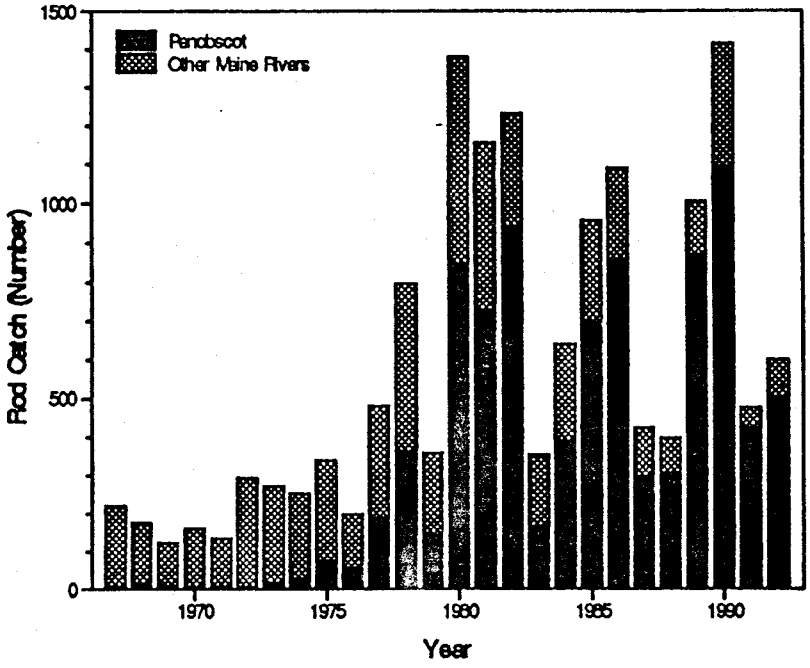


Figure 2. Sport catch of Atlantic salmon of all ages in the Penobscot and other Maine rivers (includes released fish) from 1967-1992.

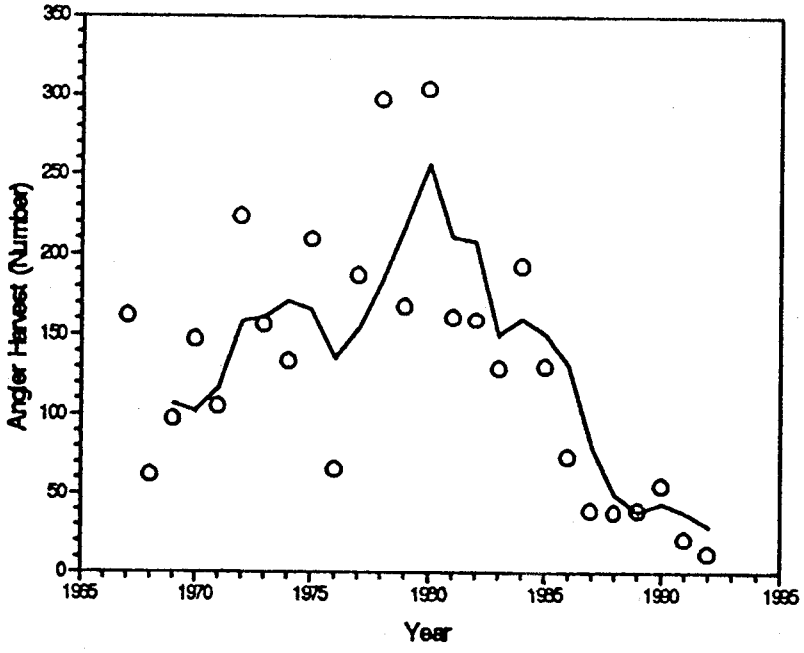


Figure 3. Angler harvest of wild origin 2SW Atlantic salmon in Maine rivers still supporting self-sustaining runs from 1967-1992. Line indicates 3-year moving average.

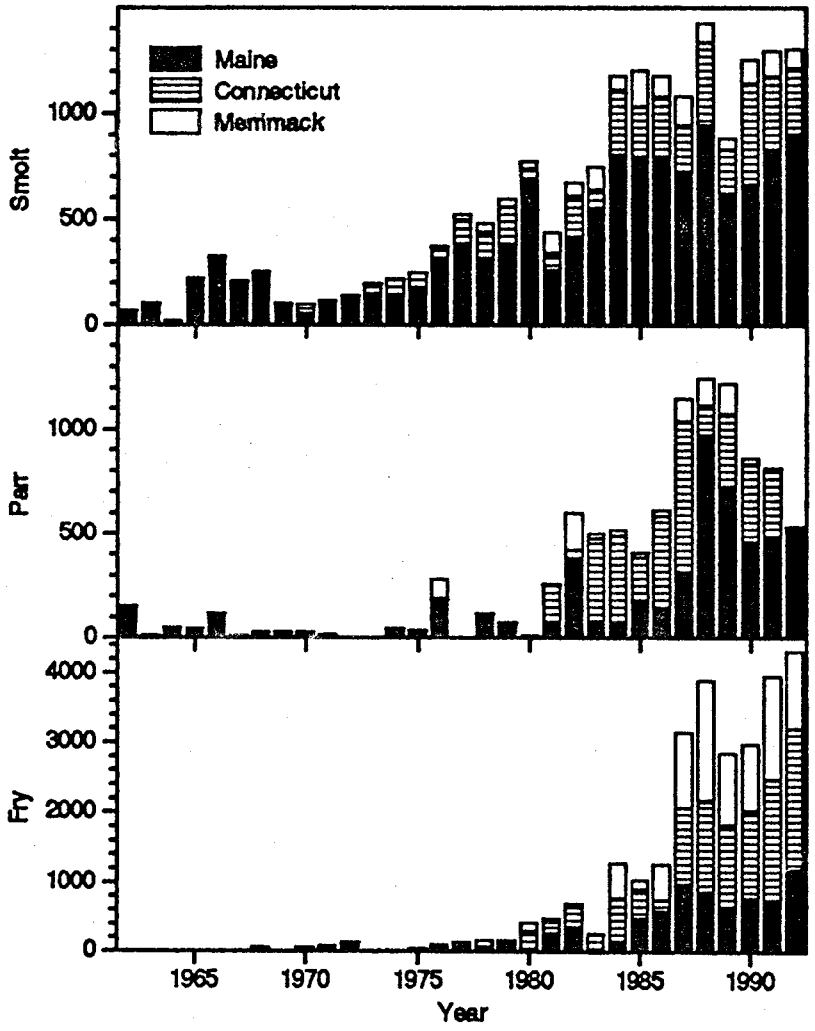


Figure 4. Releases of juvenile Atlantic salmon in USA rivers (000's of fish) from 1962-1992.

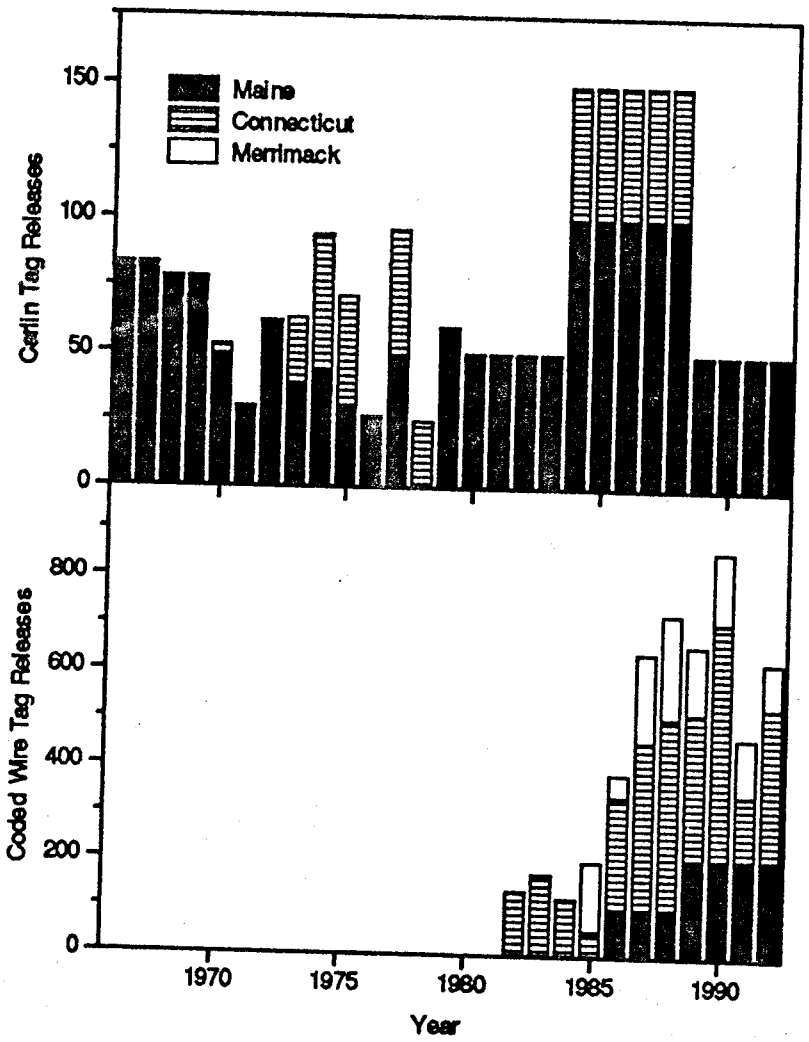


Figure 5. Tag releases on USA rivers (000's of fish) from 1966-1992.

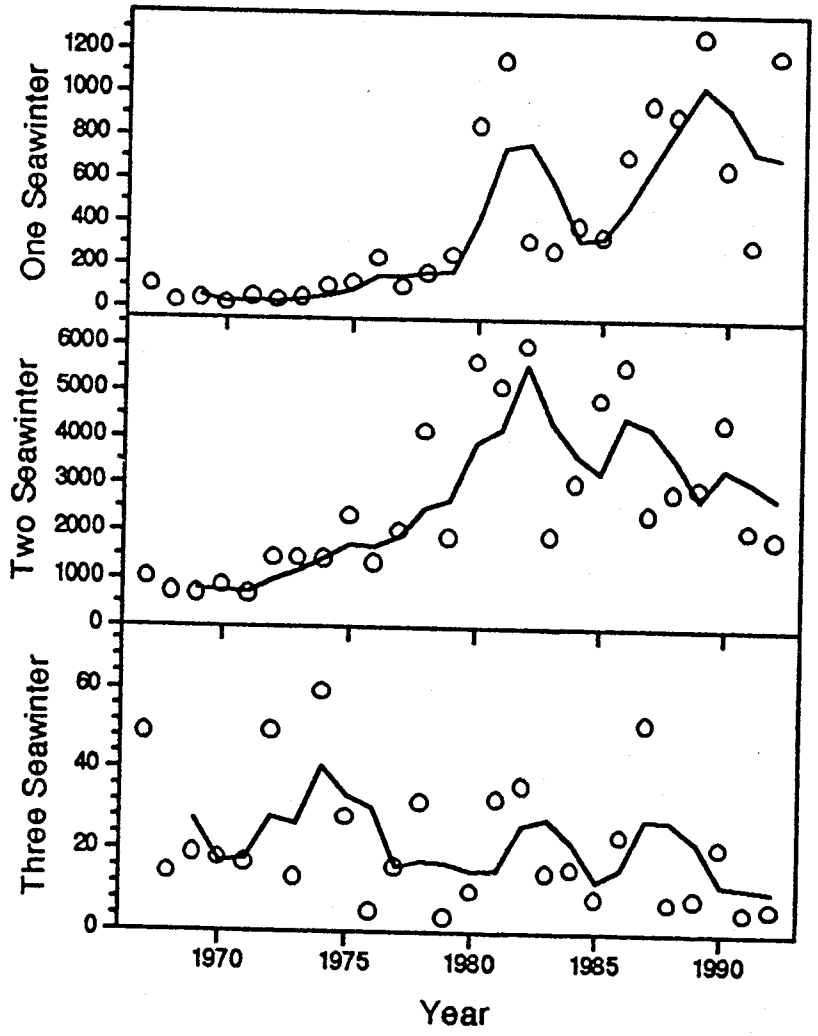


Figure 6. Estimated run size (ICES Working Group Model) of 1, 2 and 3 sea-winter Atlantic salmon to Maine rivers. Lines indicate 3-year moving averages.

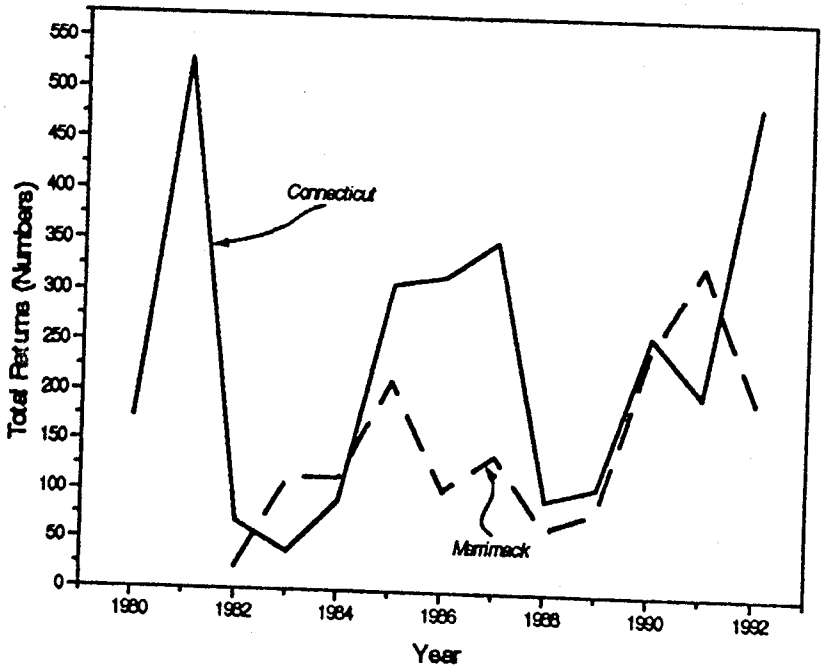


Figure 7. Total returns of Atlantic salmon of all ages to the Connecticut and Merrimack Rivers.

ANNEX 7

NORTH AMERICAN COMMISSION

NAC(93)11

STATUS OF ATLANTIC SALMON STOCKS IN 1992

Tabled by Canada

NAC(93)11

STATUS OF ATLANTIC SALMON STOCKS IN 1992

INTRODUCTION

Several sources of information are used to assess the status of Atlantic salmon; the most important are derived from the fisheries, from counting fences and from mark-recapture experiments. The year to year comparison of the information from the fisheries is difficult because fishing success is influenced by environmental conditions such as water levels and temperatures in rivers or at sea. Counts of returning salmon at fishways, counting fences and estimates derived from mark-recapture studies are more reliable but they are not available for all rivers.

In this document, salmon are generally referred to in two size categories, small and large. For salmon in freshwater, small salmon refers to salmon less than 63 cm in length. They are primarily mature virgin one-sea-winter (1SW) salmon (grilse) but may include some previous spawning grilse and virgin multi-sea-winter (MSW) salmon. Large salmon refers to salmon greater than or equal to 63 cm and are primarily virgin MSW salmon with some repeat spawning grilse and MSW salmon. Salmon caught in the commercial fishery are categorized by fish buyers as small or large by weight. Generally salmon less than 2.7 kg whole weight are graded as small and salmon greater than or equal to 2.7 kg are graded as large salmon. The large salmon would be primarily MSW salmon but could also include some maturing and non-maturing 1SW salmon as well as previous spawners. Small salmon are primarily 1SW salmon, consisting of maturing and non-maturing components, as well as some previous spawners and two-sea-winter (2SW) salmon.

Atlantic Overview

In 1992, major changes were introduced to the Atlantic salmon fisheries, particularly those of the province of Newfoundland and Labrador. A five-year moratorium was placed on the commercial fishery in insular Newfoundland while, in Labrador, commercial fishing continued under quota or an allowance. The seasonal bag limit in the recreational fishery was reduced from ten to eight fish in Newfoundland, Labrador, New Brunswick and Nova Scotia and quotas were introduced in the recreational fishery of Newfoundland and Labrador for the first time. As the quota for each Salmon Fishing Area (SFA) (Figure 1) was reached, the retention of salmon in the recreational fishery was closed for all rivers of that SFA; only hook-and-release fishing was allowed thereafter. As well, in July, a moratorium was announced on the northern cod fishery, potentially reducing salmon by-catch in SFAs 1-9. As a result of these dramatic changes, salmon harvests and returns to some rivers varied greatly from past patterns making interpretation of the status of stocks more difficult. As well as affecting the 1992 returns to rivers in Newfoundland, changes to the commercial fishery in Newfoundland could have resulted in increased returns to some rivers of Quebec and the Maritime Provinces, although impacts on the return of large salmon would generally not be expected to start until 1993.

The provisional catch of salmon in 1992 of all sea-ages combined by all users was 470 t which was the lowest on record and 66% of the 1991 harvest and 40% and 27% of the previous 5- and 20-year means, respectively (Figure 2). The 291 t harvest of large salmon was the lowest on record, 79% of the 1991 harvest and 48% and 27% of the previous 5- and

20-year means, respectively. The 179 t harvest of small salmon was the lowest of record, 52% of the 1991 harvest and 32% of the previous 5 year mean and 27% of the 20 year mean.

The 1992 harvest by weight for all sea-ages combined was taken by the following users (with % of the total):

Commercial	(51.3%)
Recreational	(42.1%)
Native food fisheries	(6.6%)

Table 1 provides an Atlantic overview of the status of Atlantic salmon stocks in 1992 using various indicators including recreational catches, commercial catches, and estimates of returns to rivers. Data for 1992 are compared to 1991 and the previous 5-year means. Differences are expressed in terms of changes, whether increases or decreases of greater than 10%, or no change, that is an increase or decrease of less than 10%. It should be noted that there is no statistical significance associated with these percentage changes; they are used only to reflect, in a general manner, conditions of stocks in 1992 relative to previous time intervals.

In comparison with 1991, recreational catches of small salmon increased in most areas. Catches in 1991 were quite low, however, particularly in Newfoundland and a more appropriate comparison would be with the longer-term mean. In this case, only in Quebec, western Newfoundland and Gulf NB were recreational catches of small salmon higher than the average. Recreational catches of large salmon (including catch-and-release estimates) were higher in most SFAs in comparison to both 1991 and the mean. Exceptions were in Nova Scotia (SFAs19-21)and Quebec (Q9-Q11).

The commercial fishery in Labrador was better in 1992 than in 1991 but catches of both size categories continue to be below average. Similar to previous years, quotas were not reached. In Quebec, commercial catches were generally lower in 1992, compared to 1991 and the average. The exception however was the Lower North Shore (Q9) where catches increased to about 20% over average.

Counting facilities in Newfoundland recorded generally increased returns of both small and large salmon, both in comparison to 1991 and to the mean of the past 5 years; this was as expected with a commercial closure and quotas on recreational fisheries. Increased counts were generally noted throughout the Gulf Region while in the Scotia-Fundy Region, there were generally decreases or little change in the return of small and large salmon.

The fishery for salmon at Greenland was poor; the catch was approximately 185 t in 1992, the lowest on record since 1961. Indicators of abundance were the third lowest recorded at West Greenland since 1980.

The major changes in the fisheries in 1992, makes it difficult to forecast returns for 1993.

Newfoundland Region - Labrador and Insular Newfoundland SFA 1-11

In 1992, the most significant change to date in the management of Atlantic salmon in the Newfoundland Region went into effect. A five-year moratorium was placed on the commercial fishery in insular Newfoundland while in Labrador, fishing continued under quota or allowance. In addition, a voluntary commercial license retirement program was

implemented in both insular Newfoundland and Labrador. Otherwise, fishing regulations were the same as in 1991. It was illegal to retain Atlantic salmon caught as by-catch and the mandatory carcass tagging program remained in effect. The commercial fishery opening and closure dates for SFAs 1 and 2 were June 5-October 15.

Quotas were introduced in the recreational fishery in each SFA for the first time in 1992. The quotas were assigned for the SFA as a whole and were not administered on an individual river basis. After the quota for retained fish was taken in each SFA, hook and release fishing only was permitted starting on July 8; the regulation allowing this to occur came into effect on that date. The season bag limit was reduced from ten to eight fish. Otherwise, angling regulations were the same as in 1991. There was a mandatory release of large salmon in insular Newfoundland but not in Labrador. The maximum number of fish that could be retained per day was two and the maximum number that could be hooked and released was four. Angling ceased for the day when one or the other limit was attained. On a river-specific basis, the recreational catch in Conne River was limited to a quota of 330 fish.

Catches were less than the quotas in SFAs 1, 2, and 5, and exceeded the quotas in SFAs 3, 4, 6, 9, 10, and 11. Cumulative catches to the closure of the fishery indicated increases in some SFAs and decreases in others; catches of large salmon in Labrador were above average.

Labrador

In Labrador, the commercial fishery lasted the entire season, closing on October 15. For the third year in a row, the quota was not caught in this fishery. There was a combined quota/allowance of 260 t, 20 t of which was taken from the 80 t allowance in SFA 1 and 132 t from the 180 t quota in SFA 2. The total represents 58% of the quota/allowance taken in 1992 compared to 64% in 1990 and 31% in 1991. The salmon harvested in the Labrador commercial salmon fishery are believed to be primarily of Labrador origin. Sampling of the large salmon commercial catch in SFAs 1 and 2 indicate that the majority of them possess a river age greater than 3 years. Large salmon with river ages greater than 3 years are principally from stocks in Labrador and the Quebec North Shore.

In the recreational fishery, the numbers of retained small and large salmon in Labrador at the time quotas were reached, were higher than the 1991 angling season which had the lowest catches on record. The small salmon catches remained below the 1984-89 and 1986-91 means mainly because of the low catches in SFA 1. Large salmon catches improved over both means.

In July of 1992, a moratorium was implemented on the northern cod fishery affecting SFAs 1-9. This measure should have resulted in the elimination of any by-catch in cod fishing gear. It is possible that Atlantic salmon normally taken in the commercial fishery in SFA 3 contributed to catches in Labrador in 1992; in the past, Labrador-origin salmon have been intercepted in SFA 3.

The low catch of small salmon in the commercial fishery coupled with average and less than average catches in the recreational fishery suggest abundance was low in 1992. The commercial catch of large salmon remained low in 1992 although an improvement was noted in the recreational fishery. The magnitude of catch in the commercial fishery, however, suggests that the overall abundance of large salmon was low in 1992. An analysis of catch rates corroborates the conclusions of low abundance as does the analysis of trends in catches

of large salmon in Labrador and small salmon at West Greenland with a river age greater than 3 years.

An increase was noted in the ratio of large salmon to small salmon in the angling fishery in Labrador over previous years. A possible explanation for this is a change in fishing pattern with anglers opting to retain more large salmon as part of the total season bag limit for retained fish than in previous years. This might be a reflection of the imposition of quotas on this fishery for the first time. Alternatively, it may not have been a matter of choice; the change might reflect overall greater availability of large salmon.

Insular Newfoundland

The catch of 12,271 small salmon retained in the recreational fishery in 1992 was compared to the catch to the same date for the period 1984-91. The catch increased 186% over 1991, decreased 6% from the 1984-89 mean, and increased by 17% over the 1986-91 mean. The catch in 1991 was one of the lowest on record. With respect to the means, on an individual SFA basis, with the exception of SFAs 3, 4, and 5, catches of small salmon were below average. Effort and CPUE overall increased over 1991 with only marginal changes relative to the means.

Except for Northeast Brook, Trepassey, counts of large salmon increased over 1991. In relation to the 1984-89 and 1986-91 means, increases occurred for all rivers except Biscay Bay River (SFA 9), Northeast Brook, Trepassey, and Conne River where the low escapements of large salmon in 1992, in these rivers, could be related to low escapements of virgin grilse in 1991 as most of the fish classified as large salmon in rivers in the insular Newfoundland portion of the Newfoundland Region are repeat spawning grilse. The angling catches up to the time the quota was caught in each SFA used in terms of indices of abundance should be viewed with caution. There were differences among SFAs in the times quotas were caught (e.g., July 4 in SFA 10, July 24 in SFAs 3 and 4, August 28 in SFA 1). Of particular concern are differences in annual timing of runs into rivers which could confound historical comparisons; for example, notable delays in adult migration occurred in 1985 and 1991.

STOCK: Exploits River, SFA 4

TARGET: 95.9×10^6 eggs (equivalent to 56,670 1SW salmon)
Lower Exploits 16.4×10^6 eggs
Middle Exploits 64.2×10^6 eggs
Upper Exploits 15.4×10^6 eggs

Year	1987	1988	1989	1990	1991	1992[1]	MIN	MAX	MEAN[8]
Angling harvest[2]:									
1SW	1935	1731	577	917	1045	1408	79	2998	1241
Brood removals[3]:	4303	5111	4459	3869	1408	1078	74	5111	3812
Total returns[4]:	9791	9643	7666	7117	5758	13818	5083	19557	7995
1SW	9481	9496	7577	6995	5659	13504	4740	19205	7482
Large Salmon	310	147	89	122	99	314	343	352	153
% of target met:									
Lower Exploits[5]	65	61	48	47	35	63	9	127	51
Middle Exploits[6]	9	12	14	12	14	18	1	20	12
Upper Exploits[7]	96	125	119	88	0	2	0	125	66

[1] Preliminary data.
[2] MIN, MAX period from 1960-1991.
[3] MIN, MAX period from 1974-1991.
[4] MIN, MAX period from 1974-1991.
[5] MIN, MAX period from 1972-1991.
[6] MIN, MAX period from 1967-1991.
[7] MIN, MAX period from 1975-1991.
[8] MEAN period from 1987-1991.

Methodologies: Fluvial habitat includes 3.5×10^5 units and lacustrine includes 3.4×10^4 ha. of standing water habitat. Target eggs are to come from 1SW salmon. Biological characteristics used are those of the Exploits stock. Current fry releases are backcalculated to eggs for % of target egg achieved in areas stocked. Total returns to the river are based on the count at Bishop Falls fishway plus angling below fishway.

Broodstock requirements: 1400 1SW fish.

State of the stock: From 1987 to 1991, the lower, middle and upper Exploits have averaged 51%, 12% and 66% of target egg, respectively, based on fry releases and natural spawning.

STOCK: Gander River, SFA 4
TARGET: 46.211 million eggs (~21,828 small salmon)

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Recreational catch (small salmon)									
	1444	2686	1173	1155	1180	1268	1155	4578	2459
Counts									
Small			7743	7520	6445	18316	6445	18316	10006
Large			473	508	670	4154	473	4154	1451
% of target met									
			35	36	33	111	33	111	54

[1]Recreational fishery data are for the period 1974 to 1991. The catch for 1992 is retained catch to the time the SFA quota was caught and does not include hook-and-release fish. Data prior to 1992 are for retained fish for the entire angling season. Data for 1987 are omitted from the calculation of min, max, and mean due to river closure as a result of drought conditions.

Recreational catches: Catches have ranged from 1,155 to 4,578 small salmon during the past 17 years (1974-91) and have declined during the 1980s (1981-90). Effort has remained relatively steady. The catch of small salmon in 1992 up to July 24 when the quota for retained fish was taken in SFA 4 was higher than for the entire angling season in 1989-91.

Data and assessment: Complete counts of salmon are obtained at a fish counting fence, 1989-92, and have historically been counted at a fishway located on a tributary, Salmon Brook.

State of the stock: The percentage of target egg deposition achieved in 1989-91 ranged from 33% to 36%. In 1992, a small surplus to target requirement was achieved. The relative contribution to the total target spawning requirement by large salmon in 1992 increased to 40% from an average of 17% for 1989-91. Using Salmon Brook as an indicator of returns to the entire river, it is likely that the small salmon returns in 1992 were similar to those experienced in some years prior to the salmon moratorium. The return of large salmon to Salmon Brook in 1992 was the highest on record.

STOCK: Middle Brook, SFA 5
TARGET: 2.3 million eggs (~1012 small salmon)

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Recreational catch (small salmon)									
	187	708	165	349	278	423	165	789	461
Fishway counts									
Small	914	772	496	745	562	1168	496	2415	1121
Large	19	14	19	13	14	43	13	91	34
% of target met									
	90	66	50	75	51	142	51	142	87

[1]Recreational catch is for the period 1974 to 1991. The catch for 1992 is retained catch to the time the SFA quota was caught and does not include hook-and-release fish. Data prior to 1992 are for retained fish for the entire angling season. The years 1979 and 1987 are omitted from calculations of min, max, and mean due to river closures resulting from drought conditions. Means for fishway counts are from 1980 to 1992. Summary for target egg deposition applies from 1984 and represents contribution from both small and large salmon.

Recreational catches: For the period 1974-91, catches have ranged from 165 to 789 small salmon. Rod days of effort peaked during the mid-1980s but have declined substantially in recent years. In 1992, the number of retained fish up to July 19 when the quota for SFA 5 was caught, was higher than the entire catch observed for 1991.

Data and assessment: Complete counts of fish are available from a fishway.

State of the stock: Target egg deposition requirements were met in 1984 and 1992. Even though the commercial salmon and cod fisheries were closed in 1992, counts of both small and large salmon in the past have equalled or surpassed those of 1992.

STOCK: Terra Nova River, SFA 5
TARGET: 14.30 million eggs (7094 small fish)

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Recreational catch (small salmon)									
	546	682	357	624	448	409	243	850	559
Fishway counts									
Small	974	1737	1138	1149	873	1443	569	1737	1111
Large	56	206	142	144	114	270	19	270	112
% of target met									
	15	30	20	20	16	29	15	30	21

[1]Recreational catches are for the period 1974 to 1991. The catch for 1992 is retained catch to the time the SFA quota was caught and does not include hook-and-release fish. Data prior to 1992 are for retained fish for the entire angling season. Means for fishway counts are from 1979 to 1992. Summary for targets here applies from 1984.

Recreational catches: For the period 1974-91, catches have ranged from 243 to 850 small salmon. Catches in recent years have declined relative to those during the late 1970s and early 1980s. Effort, in terms of rod days, has generally increased over time. The number of small salmon retained in 1992 up to July 19, when the quota for SFA 5 was caught, was slightly below that for the entire angling season in 1991.

Data and assessment: Complete counts of fish are available from a fishway on the lower section of the river.

STOCK: Rocky River, SFA 9
TARGET: $3.4x10^6$ eggs (equivalent to 881 1SW fish)

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Total returns:	205*	319	177	418	227	283	177	418	269
% Target met:	23	36	20	47	26	32	20	47	30

[1] MIN, MAX and MEAN for the period 1987-1991.

* includes 124 grilse transferred into Rocky River.

Background: The Rocky River was stocked with salmon fry from 1983-1987 with the first returns to the newly constructed fishway noted in 1987.

Methodologies: Fluvial habitat includes $10.8x10^3$ units and lacustrine includes $2.2x10^3$ ha. of standing water habitat. Target egg requirements are to come from 1SW salmon. Biological characteristics used are those of the Rocky River stock and other salmon stocks in SFA 9. Previous fry releases are backcalculated to eggs for the percentage of target egg number achieved in areas stocked.

Recreational fisheries: The recreational fishery is closed on this river.

Data and assessment: Complete adult counts are available from a trap installed in the fishway. Smolt counts in 1990, 1991 and 1992 have totalled 8,287, 7,732 and 7,813, respectively. Adult returns in 1991 and 1992 have been 1.8% and 3.2% of the respective smolt runs.

State of the stock: On average, the watershed is achieving 30% of its required target egg deposition.

STOCK: Biscay Bay River, SFA 9
TARGET: 2.9 million eggs (~1134 small salmon)

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Recreational catch (small salmon)									
	101	349	102	232	10	75	10	424	234
Counts									
Small	1302	1695	889	1657	394	1298	394	2516	1837
Large	106	58	104	73	35	49	35	101	73
% of target met									
	119	127	87	128	39	118	39	208	140

[1]Recreational catch is for the period 1974 to 1991. The catch for 1992 is retained catch to the time the SFA quota was caught and does not include hook-and-release fish. Data prior to 1992 are for retained fish for the entire angling season. Data for 1987 are omitted from the calculation of the mean due to river closure resulting from drought conditions. Fence counts for 1985, 87, 89, and 92 are minimum values due to incomplete counts and are not included in calculation of min, max, or means. Percentage of target met since 1984 reflects contribution of both small and large salmon.

Recreational catches: For the period 1974-1991, catches of small salmon have ranged from 10 to 424. Rod-days of effort have been relatively stable during the past decade.

Data and assessment: Complete counts of fish are obtained from a fish counting fence in operation since 1983.

State of the stock: Since 1983, from 39% to 208% of the target egg deposition was achieved. Including those years when incomplete counts were obtained, the target egg requirement has been met or exceeded in all years but 1991. Even though the commercial salmon and cod fisheries were closed in 1992, returns of both small and large salmon have been higher in the past.

STOCK: Northeast River, SFA 10
TARGET: 0.72 million eggs (~224 small salmon)

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Recreational catch (small salmon)									
	36	186	210	173	19	37	19	349	168
Fishway counts									
Small	325	543	706	551	353	921	224	921	473
Large	16	11	15	25	8	46	0	56	27
% of target met									
	152	209	277	251	161	440	152	440	254

[1] Recreational catch is for the period 1974 to 1991. The catch for 1992 is retained catch to the time the SFA quota was caught and does not include hook-and-release fish. Data prior to 1992 are for retained fish for the entire angling season. Data for 1987 are omitted from the calculation of the mean due to river closure resulting from drought conditions. Fishway counts (since 1974) for 1975, 81, 82, and 87 are minimum values due to incomplete counts. These years are omitted from calculation of min, max, and means. Percentage of target met (since 1984) reflects the contribution from both small and large salmon.

Recreational catches: For the period 1974-91, catches of small salmon have ranged from 19 to 349. Rod-days of effort peaked during the early 1980s (1984-88) but have declined substantially in recent years.

Data and assessment: Complete counts of fish are available from a fish counting fence.

State of the stock: Target egg deposition requirements have been exceeded in all years including 1992.

STOCK: Conne River, Newfoundland, SFA 11

TARGET: 7.8 million eggs (~4000 small salmon) calculated as fluvial area x 2.4 eggs/m^2 and egg/recruit applied to total population as derived from assumed commercial exploitation rates.

Year	1987	1988	1989	1990	1991	1992[2]	MIN[1]	MAX[1]	MEAN[1]
HARVEST:									
Native									
Large	0	2	1	11	3	5	0	11	3
Small	18	607	381	959	281	484	18	959	461
Recreational									
Small	1598	1544	1036	767	108	329	108	3302	1824
Returns:									
Large	516	420	320	372	89	159	89	516	355
Small	10155	7627	4968	5377	2411	2523	2411	10155	6473
Escapement:									
Large	488	418	319	361	87	153	87	488	345
Small	7823	5567	3609	3765	2062	1783	2062	7823	4709
% of target met:									
	214	159	103	112	51	51	51	214	131

[1] Recreational catch is for the period 1974-91; other data are for 1986-91.
[2] Preliminary data.
Angling catches are DFO statistics.
Native catch in salt water includes some salmon from other rivers.
A food fishery quota of 1200 fish has been in effect since 1986.

Data and methology: The smolts used in adult forecasts are surveyed by mark-recapture. Returning adult salmon are enumerated at a fish counting fence.

State of the stock: The target requirements were met from 1986-90. Only 51% of the target was achieved in 1991 and 1992. Low sea survival impacted on salmon returns during the past two years.

Forecast: The estimated smolt output in 1992 of 68200 (61300-75050) indicates a pre-season forecast for 1993 of 4500 fish (4000-4900). Low sea survival could again impact on reducing expected numbers of returning salmon. In-season monitoring could be used to provide updates on changing conditions as the 1993 run progresses.

Gulf Region - SFAs 12-18

Commercial fisheries for Atlantic salmon stocks in SFAs 12, 13, and 14(A) were closed in 1992 and the quota in SFA 14(B) was reduced to 13 t from 15 t in 1991. The SFA 14(B) harvests from north of Henley Harbour to Cape Charles were deducted from the SFA 2 quota in 1992, as in 1991, because these catches were made by SFA 2 licensed fishermen who fished and landed their catch in SFA 14(B). The total number of licenses available to be fished in southern Labrador in 1992 was 63 compared to 76 in 1991.

Recreational fishery management changes in 1992 included the introduction of zonal SFA quotas which were set approximately equivalent to the average catch for the previous three years in each SFA. In SFAs 12, 13 and 14(B) the quota was for small salmon only, as all large salmon were required to be released; in SFA 14(B) the quota was for small and large salmon.

Ten rivers were managed by individual river quotas in 1992 compared to 9 in 1991. A catch and release fishery for small and large salmon was permitted until the end of the season in all SFAs after either the zonal quota or the river quota was reached. The season bag limit was reduced to 8 fish from 10 in 1991. Duration of seasons remained the same as those since 1984 in SFAs 12, 13, and 14(A); however, the SFA 14(B) season was extended by two weeks.

Recreational quotas were reached in all SFAs before the end of the season and catch-and-release angling was permitted. The catch and release fishery began officially on July 8 in SFA 12 which resulted in the loss of one day fishing after the closure of the retention fishery. Catches of small salmon during the catch-and-release fishery represented 42% of the total catch of small salmon in SFA 12 and only 10% of catches in other areas. Angling catches of small salmon dropped off quickly in all SFAs once zonal quotas were reached, indicating that the catch-and-release fishery was not prosecuted to the same extent as for retained fish and resulted in fewer anglers on the rivers. Catches of large salmon had dropped off before quotas were reached, indicating an earlier run-timing for large salmon in all areas. In SFA 14(B), southern Labrador, where large salmon could be retained and where declining large salmon abundance has been noted in previous assessments, the large salmon component of the stock did not benefit from the early closure of the recreational fishery. The early closure resulted in a disproportionate harvesting of small and large salmon. The earlier entry of large salmon into southern Labrador rivers resulted in the exploitation of these fish over their entire run, whereas only a portion of the small salmon run was exploited.

Total (retained + released) recreational catches of small salmon were above those in 1991 for SFAs 12, 13 and 14(A) but did not increase relative to the 1984-1989 mean. In southern Labrador catches of small salmon were 20% below those in 1991 and below the 1984-1989 mean and 95% confidence limits.

The greatest change in recreational catches in 1992 was in the catches of large salmon which was two to four times higher than in the previous year and suggests a positive impact on river escapements in 1992 from the reduction in commercial fishing mortality. Relative to the 1984-89 mean catches, only large salmon increased significantly in 1992. This increase was not necessarily indicative of an increase in total abundance but was probably the result of the removal of commercial gillnets which selectively harvested larger salmon.

It was noted that total recreational catches recorded in 1992 exceeded the total recreational quota by 13%. The discrepancy between the quota and the actual catch ranged from zero to 23%, depending on the SFA, drawing attention to the accuracy of traditional angling catch estimates for quota monitoring. Attention was also drawn to the discrepancy between angling catch estimates by traditional methods and catches estimated by the "bus route" creel survey method on the Humber River in 1992. Catch estimates based on the creel survey suggest that catches were actually twice as high as reported. These results question the utility of traditional catch and effort statistics collection methods in quota monitoring and in evaluating the effect of the closure of the commercial fishery on recreational fisheries harvests.

Cumulative commercial landings of small salmon in southern Labrador in 1992, up to week 29, when the quota in the southern portion of the area was reached, were the lowest recorded since 1984 and landings of large salmon were the third lowest. The proportion of large salmon in commercial catches increased in 1992 but this was probably due to an earlier run-timing of large relative to small salmon, in this area rather than an increase in large salmon abundance.

Returns of small and large salmon to index facilities in SFA 13 and SFA 14(A) in 1992 were consistent with the increase in river escapements in 1992 suggested by recreational catches. Returns of large salmon to all facilities, except for Bound Brook in SFA 14(A), were the highest recorded. Returns of small salmon, although above returns in 1991, were within the 95% confidence limits of the 1984-89 mean.

The smolt survival to Western Arm Brook in 1992 was 3.6%, the highest since 1985. With a 15% increase in smolt counts in 1992, and assuming a similar sea survival to the previous year, returns of adult salmon to the river in 1993 should be about 15% greater than in 1992.

New assessment projects were initiated on the Richibucto, Tabusintac and Buctouche rivers as native co-management programs with the Big Cove, Burnt Church and Buctouche bands, respectively. In 1992, native personnel gained experience in constructing and operating assessment trapnets and collected biological data during the fall salmon run in all three rivers. Sufficient data for assessment of salmon abundance are expected to be collected in 1993.

In addition to stocking the Morell River in SFA 17 of Prince Edward Island, enhancement projects have been initiated on the Trout, Dunk, Valleyfield, and West rivers. Estimates of the catches of the recreational and native fisheries are not available for either 1991 or 1992. The Morell River has the largest salmon returns in SFA 17. Returns to the Leard's Pond fishway on the Morell River were 907 small and 46 large salmon, of which the majority are of hatchery origin. These counts represent increases of 177% and 18% compared to 1991 and translate into a return rate to date of 3.4% for the 26,643 smolts stocked above Leard's Pond in 1991.

Details on specific rivers in the Gulf Region follow: Humber River (SFA 13); Restigouche River (SFA 15); Miramichi River (SFA 16); and the Margaree River (SFA 18).

STOCK: Humber River, Bay of Islands, SFA 13, Newfoundland
TARGET: 27.673×10^6 eggs calculated as rearing area x 2.4 eggs/m^2

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Angling harvest - Humber River									
Small	3074	4042	1217	3054	1431	4479	1217[2]	5102[2]	2564
Commercial harvest - Bay of Islands (number)									
Small[3]	8060	9989	4211	4983	2007	-	2007	9989	5850
Large[3]	728	824	815	579	244	-	244	824	638
Total returns									
Small	12296	16168	4868	12216	5724	22364	4868	16168	10254
Large	861	1132	341	855	401	3748	341	1132	718
Spawning escapement									
Small	9222	12126	3651	9162	4293	17885	3651	12126	7691
Large	861	1132	341	855	401	3748	341	1132	718
% of egg target met (small + large)									
	58	77	23	58	27	159	23	77	49

[1] For the period 1987-1991 unless otherwise indicated.

[2] For the period 1976-1991.

[3] Small - commercial refers to salmon less than 2.7 kg round weight.
recreational refers to salmon less than 63 cm fork length.

Large - commercial refers to salmon greater than or equal to 2.7 kg round weight.
recreational refers to salmon greater than or equal to 63 cm fork length.

Methodologies: The drainage area equals 8000 km^2 and the accessible rearing area equals 115.3×10^6 m^2. Target eggs come from 1SW and MSW salmon. Biological characteristics are based on samples from the Humber River - Bay of Islands stock. The current assessment of the state of the stock are based on estimates of 1SW angling catches as estimated by mark-recapture method. MSW salmon catches are assumed to equal 16.76% of 1SW catches. The angling exploitation rates were estimated in 1990 and 1991 and a value of 0.25 was used for 1987 to 1991. For 1992, returns were estimated based on an angling exploitation rate derived from tag recoveries at the Big Falls section of the river from small salmon recaptures observed by DFO creel survey personnel.

State of the stock: Egg depositions by all salmon have, on average, been less than 50% of the target in the last 5 years. With the Bay of Islands commercial fishery closed in 1992, egg depositions were 159% of the target.

STOCK: Restigouche River, SFA 15
LIFE STAGE: Juveniles (0+,1+,2+), small and large salmon
TARGET: 71.4 million eggs (12,200 large salmon, 2,600 small salmon)

	1987	1988	1989	1990	1991	1992[8]	MIN	MAX	MEAN[9]
River harvest (angling harvest, catch-release mortalities, broodstock removals)[1]									
Large	1073	1207	1336	1146	1181	1327	688	6707	1189
Small	5005	6776	3301	4324	2522	4755	896	6776	4386
Estuary harvest (Native harvest)[1]									
Large	1902	1430	1649	1606	1111	1412	23	18180	1540
Small	100	73	163	136	19	55	0	7339	98
Spawning escapement[1,2]									
Large (x1000)	7-13	10-17	8-13	6-11	5-9	7-13	1-2	11-19	7-13
Small (x1000)	5-12	7-16	3-8	4-10	3-6	5-11	1-2	7-16	4-10
Total returns[1,2]									
Large (x1000)	12-18	15-23	12-19	10-16	9-14	12-19	6-9	23-26	12-18
Small (x1000)	12-19	16-26	8-13	10-17	6-10	11-18	3-4	16-26	10-17
% egg target met[1,2]	59-105	83-146	63-113	53-95	43-78	62-111	9-20	89-159	60-107
Canoe counts of spawners[3]									
Large	8535	9520	12362	----	7513	4909	2397	12362	9483
Small	3930	3861	3970	----	3836	3002	986	5190	3899
Barrier counts of spawners									
Upsalquitch[4]: Large	1000	993	894[6]	946[6]	930[6]	963	301	1166	953
Small	1557	1121	1051	1324	1267	1351	430	1738	1264
Causapscal[5]: Large	----	505	605	456[6]	451	350[6]	460	605	504
Small	----	49	7	37	9	8	7	49	26
Juvenile Densities[7]									
0+	42.0	53.2	72.1	53.2	106.5	49.6	5.2	106.5	65.4
1+	9.4	6.1	12.1	12.9	12.3	14.6	2.4	12.9	10.6
2+	4.7	2.1	1.9	3.1	2.9	2.8	0.4	4.7	2.9

[1] MIN MAX for years 1970-1991.
[2] Range given reflects uncertainty of angling exploitation rate (assumed to be between 0.3 and 0.5), from which spawning escapement (and therefore eggs), and total returns are derived.
[3] MIN MAX for years 1982-1991.
[4] MIN MAX for years 1980-1991.
[5] MIN MAX for years 1988-1991.
[6] Incomplete counts.
[7] MIN MAX for years 1972-1991.
[8] 1992 data are preliminary.
[9] MEAN for years 1987-1991.

Recreational catches: The angling catch of both large and small salmon in 1992 was within 10% of the 5-year mean.

Data and assessment: Spawning escapement, losses to poaching and disease, and total returns are all calculated from angling catch and exploitation rate. Exploitation rate has not been measured since 1977, but is assumed to be between 0.3 and 0.5. Spawning escapement has been estimated by canoe surveys since 1982. Since 1980 salmon are counted at headwater

protection barriers on the Upsalquitch River and since 1988 on the Causapscal River (Matapedia). Juvenile salmon densities (number/100 m^2) were estimated from electrofishing at 15 standard sites (since 1972) except in 1991 (8 sites) and 1992 (10 sites).

State of the stock: Because angling exploitation rates have not been measured in recent years, true spawning escapements are unknown. Potential indices of spawning escapement (canoe counts, barrier counts, and juvenile densities) suggest that the stock is larger now than it was in the early 1980s.

Forecast for 1993: Based on the mean returns from 1988 - 1992, between 12,000 - 18,000 large and between 10,000 - 17,000 small salmon are expected to return in 1993. There is no evidence to suggest that returns will be significantly different from the average. The ranges given reflect the upper and lower exploitation rates used in calculating returns, not confidence limits.

STOCK: Miramichi River, SFA 16
LIFE STAGE: Juveniles (0+,1+,2+), small and large salmon
TARGET: 132 million eggs (23,600 large, 22,600 small salmon)

	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[7]
Angling harvest[2]									
Large	358	303	358	278	184	323	54	358	296
Small	20765	30620	24426	21372	11300	25593	8265	30620	21697
Native harvest[3]									
Large	898	348	540	609	544	608	200[6]	898[6]	588
Small	1274	944	1085	2110	1111	1652	100[6]	2110[6]	1305
Other harvest[4]									
Large	109	114	153	99	131	142	99[7]	153[7]	121
Small	114	77	155	142	189	198	77[7]	189[7]	135
Spawning escapement									
Large (x 1000)	18	21	16	28	29	31	4	34	22
Small (x 1000)	63	90	48	60	48	125	13	90	62
Total returns									
Large (x 1000)	19	22	17	29	30	32	9	52	23
Small (x 1000)	85	122	75	83	61	153	24	122	85
% Egg target met	142	150	97	151	158	201	23	192	140
Juvenile densities[5]									
0+	74.5	95.1	72.2	94.6	44.6	74.0	9.4	95.1	76.2
1+	13.1	13.9	18.4	12.4	14.3	21.6	3.0	18.4	14.4
2+	2.5	1.8	2.6	2.9	10.4	4.1	0.8	10.4	4.0

[1] MIN MAX over the period 1971-1991 unless stated otherwise.
[2] Angling harvest of large salmon is mortality due to catch and release, estimated to be 3% of catch.
[3] Native harvest includes catch reported by Burnt Church, Red Bank, and Eelground Indian Bands.
[4] Other harvest includes broodstock removals, mortalities at all index traps, and all samples.
[5] Number per square meter, from electrofishing surveys at 15 standard sites (3 in 1991, 14 in 1992).
[6] For 1975 to 1991.
[7] For 1987 to 1991.

Recreational catches: Have ranged from 2,240 to 14,266 large and 8,390 to 30,620 small salmon during the past 10 years. Effort in rod-days has increased in recent years. Angling

catches in 1992 were estimated from DFO figures as Department of Natural Resources and Energy figures were unavailable. Grilse catches were 18% above the average; large salmon catches were 9% above average.

Data and assessment: An index trap has been operated on the Miramichi River since 1954. The trap efficiency, estimated in 1972-73, changed in the early 1980s when the river channel was altered and the trap was recalibrated in 1985-87. Estimated returns from the trap efficiency and mark-recapture have been similar in recent years, but were very different in 1992 suggesting a dramatically lower trap efficiency in 1992. Three index traps were operated in the Northwest Miramichi estuary and 1 trap in the Southwest estuary in 1992. Tag recapture estimates of grilse from tags put on at Millbank and recovered at Enclosure traps were similar to estimates from tags put on at Enclosure traps and recovered at estuarine traps and barrier fences. The latter is reported here because the confidence interval is narrower because more tags were placed and recovered. Returns of large salmon were estimated as the product of returns of small salmon and the large salmon to small salmon ratio observed at Millbank trap. Spawners were estimated as returns minus known removals.

State of the stock: Target egg deposition rates have been almost met or exceeded in each of the last eight years.

Forecast for 1993: The probability distribution model prediction for large salmon returns in 1993 is 18314 with a probability of meeting the spawning target (23,600) of 21% (i.e., a 79% chance of returns being less than 23,600). However, the model is based on a data set that does not include small salmon returns as large as those estimated for 1992 and therefore is considered unreliable (i.e., the relationship between very numerous grilse returns and returns of large salmon in the next year is not well defined). In addition, closure of the Newfoundland commercial fishery may have resulted in more small salmon returns in 1992 than in previous years, and may result in more large salmon returns in 1993 than predicted.

STOCK: Northwest Miramichi River, SFA 16
LIFE STAGE: Juveniles (0+,1+,2+), small and large salmon
TARGET: 41 million eggs (7316 large, 7006 small salmon)

	1992
Angling harvest[1]	
Large	78
Small	7985
Native harvest[2]	
Large	580
Small	1616
Other harvest[3]	
Large	56
Small	61
Spawning escapement	
Large (x 1000)	6
Small (x 1000)	22
Total returns	
Large (x 1000)	7
Small (x 1000)	31
% Egg target met	119

1 Angling harvest of large salmon is mortalities due to catch and release, estimated at 3% of catch.
2 Native catch is catch reported by the Redbank and Eelground Indian Bands.
3 Other harvest includes broodstock, mortalities at the Eelground index trap, and samples.

Recreational catches: New Brunswick Department of Natural Resources and Energy FISHSYS estimates indicate that over the period 1987-1991, 27-34% (mean: 31%) of total angling in the Miramichi River has occurred in the Northwest Miramichi.

Data and assessment: Returns of small salmon to the Northwest Miramichi River were estimated in 1992 from a mark-recapture program, applying tags at Eelground Enclosure trap and recovering tags from traps at Redbank (NW), and from fences in the headwaters of the NW and in Catamaran Brook. Returns of large salmon were estimated as the product of

returns of small salmon and the large salmon to small salmon ratio observed at Millbank trap. Spawners were estimated as returns minus known and estimated removals.

State of the stock: The spawning target for large salmon was not achieved in 1992. Egg deposition was achieved because of a large surplus of small salmon. Juvenile salmon densities in the Northwest Miramichi are lower than those in the Southwest Miramichi.

Forecast for 1993: Because 1992 is the first year of data on returns, no forecast can be made of returns in 1993.

STOCK: Southwest Miramichi River, SFA 16
LIFE STAGE: Juveniles (0+,1+,2+), small and large salmon
TARGET: 88 million eggs (15,730 large, 15,063 small salmon)

	1992
Angling harvest[1]	
Large	245
Small	17608
Native harvest	
Large	0
Small	0
Other harvest[2]	
Large	75
Small	26
Spawning escapement	
Large (x 1000)	25
Small (x 1000)	104
Total returns	
Large (x 1000)	25
Small (x 1000)	121
% Egg target met	243

[1] Angling harvest of large salmon is mortalities due to catch and release, estimated at 3% of catch.

[2] Other harvest includes broodstock, mortalities at the SW Enclosure trap, and samples.

Recreational catches: Department of Natural Resources and Energy FISHSYS estimates indicate that over the period 1987-1991, 66-73% (mean: 69%) of total angling in the Miramichi River has occurred in the Southwest Miramichi.

Data and assessment: Returns to the Southwest Miramichi are estimated as the difference between returns to the river as a whole and returns to the Northwest Miramichi.

State of the stock: Spawning targets for large salmon, small salmon, and eggs were exceeded in 1992.

Forecast for 1993: Because 1992 is the first year of data on returns, no forecast can be provided for 1993.

STOCK: Margaree River (SFA 18)
TARGET: 6.7×10^6 eggs (1,036 large, 582 small salmon) calculated as area x 2.4 eggs/m^2

Year	1987	1988	1989	1990	1991	1992	MIN[2]	MAX[2]	MEAN[2]
Angling harvest									
MSW[1]	40	18	23	85	30	30	16	704	183
1SW	403	589	208	256	391	747	21	899	161
Native harvest									
MSW	-	-	-	-	1	-			-
1SW	-	-	-	-	2	-			-
Total returns									
MSW	4015	1688	2289	11144	3484	3941	167	11144	1196
1SW	1478	2209	768	997	1909	1018	72	3061	565
Spawning escapement									
MSW	3975	1670	2266	11067	3453	3931	118	11067	1013
1SW	1075	1620	560	730	1507	271	51	2162	404
% of Egg target met (MSW + 1SW)									
	387	165	217	1067	334	379	10	1067	96

[1] MSW angling catch for 1985 to 1991 is hook-and-release mortality at 5%.

[2] Min, Max and Mean are for 1947 to 1990.

Methodologies: The drainage area equals 500 km^2. Rearing area surveys were conducted during the 1950s through 1970s. All the target eggs are to come from MSW salmon. Biological characteristics are based on data from the Margaree River stock. Summer and fall (after Aug. 31) run components occur in the river with the fall run comprising over 70% large and 45% of small salmon returns in recent years. The current assessment of the state of the stock are based on angling catches, including kept and released small salmon and hook and released large salmon, as estimated by Conservation and Protection field personnel prior to 1987 and by on-site creel surveys since 1987. Angling exploitation rates are those derived for the fall angled small and large salmon from the Margaree River for the years 1988 to 1990 (avg. of 0.18 for large and 0.26 for small), assumed exploitation rate of 0.29 for summer angled large and small salmon. Integrated exploitation rates of 0.17 in 1991 and 0.11 in 1992 were used for large salmon whereas exploitation rates of 0.19 for 1991 and 0.25 for 1992 were estimated for small salmon for the entire angling catch.

State of the stock: Egg depositions by large salmon have exceeded target requirements by between one third and nearly ten fold since 1985. The summer run component has increased since the 1970s but the actual number of fish available to anglers in the summer depends on river conditions in the summer.

Forecast: On the basis of a stock-recruit relationship for the large salmon component, and using the estimated escapement of 1678 large salmon in 1988, the predicted recruitment in 1993 should be about 5000 large salmon, 10% higher than the recent five-year mean returns.

Scotia-Fundy Region (SFA 19-23)

Retained catches of small salmon in the recreational fisheries of SFAs 19, 20, and 21 in Nova Scotia in 1992 were below both the previous 5 years and 10 years average. Released catches of large salmon in SFAs 19, 20 and 21 were also lower than the mean number released during 1987-1991. Angling effort in SFAs 19, 20 and 21 was also lower than average perhaps because of poor angling conditions, particularly low river discharges and warm water temperatures much of the angling season. Catch per unit effort for retained small salmon was also lower than average. All rivers of inner Bay of Fundy (portions of SFAs 22 and 23) were closed to any legal exploitation.

The retained catch of small salmon in the outer Fundy portion of SFA 23 was 180% of that of 1991, 115% of the previous 5-year mean and 109% of the 10-year mean. Fishing effort was 200% of that in 1991 and 112% of the 1987-91 mean, in all probability because of generally good angling conditions in SFA 23. The catch per unit effort was 103% of the previous 5-year mean.

Counts of wild adult salmon at counting facilities in SFAs 19 and 20 were down from the low values of 1991; counts of 1SW fish in SFA 21 increased four-fold over 1991 while MSW salmon counts in SFA 23 were similar to those of 1991. Wild 1SW counts in the Liscomb (SFA 20), LaHave (SFA 21) and Saint John (SFA 23) rivers were 17%, 101% and 86%, respectively, of the 1987-1991 means. Wild MSW counts were 42%, 48%, and 112% of the 1987-1991 means. Counts of 1SW and MSW salmon on the Magaguadavic in SFA 23 (about one-third of aquaculture origin) were down 6% and 59%, respectively, from the mean of four annual counts in the 1980s. Less than a dozen salmon were counted at the Causeway on the Petitcodiac (SFA 23); others were known to have bypassed the fishway. In-river counts of salmon in the Middle (SFA 19), and Big Salmon (SFA 23) rivers were down from those of 1991.

Estimated returns of wild MSW salmon to Mactaquac on the Saint John River, 1992, was 116% of the forecast; counts of MSW salmon on the Liscomb and LaHave rivers were 51% and 141% of their respective pre-season forecasts.

The percentage return of 1SW fish from hatchery smolts to the Liscomb River counting facilities was the second lowest of record; the return of 1SW fish to the LaHave was 148% of that of 1991 but the fourth lowest of that 14-year record. Survival of Saint John River smolts increased slightly over the previous year but was the fourth lowest of the 17-year record. Hatchery MSW return rates on the Saint John and Liscomb rivers remained among the lowest of the series; the return rate for the LaHave River doubled over that of 1991 and approximated the mean value, 1987-1991.

The Middle (SFA 19) and the Saint John River above Mactaquac (SFA 23) did not achieve target spawning requirements. Escapements to Big Salmon and Stewiacke rivers, two index rivers for inner Bay of Fundy were similar at about 21% of requirement.

The estimated egg deposition above Liscomb Falls on the Liscomb River (SFA 20) was 0.4 eggs m^{-2}; the potential egg deposition above Morgan Falls on the LaHave River (SFA 21) was 4.9 eggs m^{-2}, up considerably from the 15+ year low in 1991. Target spawning requirements for the Liscomb and LaHave rivers remain to be established because these rivers are acid-impacted.

Hatchery fish contributed 25% and 16% of the 1SW and MSW potential spawning escapement above Mactaquac on the Saint John River, 46% and 31% of 1SW and MSW fish above Liscomb Falls on the Liscomb River, 23% and 21% of 1SW and MSW salmon above Morgan Falls on the LaHave River and 37% of all salmon above Grand River Falls on Grand River.

Forecasts indicate that wild MSW salmon returns in 1993 will be about the same as the 1992 count at Liscomb Falls and for Morgan Falls on the LaHave River, the forecast returns are 97% above the 1992 count. Both forecasts are less certain than those of previous years because the forecasts do not take into account possible impacts of the moratorium in 1992 on the insular Newfoundland commercial salmon fisheries. The estimated return of wild MSW salmon destined for Mactaquac on the Saint John River (adjusted for the Newfoundland closure) is expected to be 92% or 106% (depending on method) of the 1992 return. Wild 1SW returns to Mactaquac in 1992 are projected to be 91% or 112% (depending on method) of the 1992 return. Zero to 15% of the forecast MSW returns to Mactaquac could be composed of 2SW salmon that were affected by the moratorium on the Newfoundland commercial fishery.

It was noted that recent reports of salmon by-catch within SFA 21 in 1991 helped explain some of the dramatic reduction in the count at Morgan Falls in 1991, and that counts at the Petitcodiac fishway were an unreliable indicator of river returns, particularly in years of high river discharge.

STOCK: Grand River, SFA 19
TARGET: 1.1 million eggs

Year	1987	1988	1989[1]	1990	1991[1]	1992	MIN[2]	MAX[2]	MEAN[2]
Native fisheries				24	39	UK			
Recreational catch									
Grilse	342	338	307	416	115	139	115	416	313
Salmon	107	105	74	98	15	46	15	194	99
Broodstock		33	25	18	19	10			
Count at fishway									
Grilse		554	512	527	234	114			
Salmon		31	25	27	18	18			
% Hatchery		NA	NA	43	45	38			
Correction for by-pass									
Grilse		55	51	52	176[5]	40			
Salmon		54	19	20	14	14			
Total above fishway		694	607	626	442	186			
Population below fishway (estimate)		143	UK	UK	UK	UK			
% Angled above		UK[6]	42[3]	31[3]	31[3]	31[3]			
Required spawning escapement		539	545	545	545	545			
Estimated escapement[4]		736	453	442	348	143			
% of Adults required		136	83	83	64	26			

[1] In-season variation closures.
[2] For the period 1986-1991; not shown where only 1988-1991 data are available.
[3] Determined from post-season phone survey.
[4] Above fishway in relation to entire river.
[5] 1991 by-pass rate for fish <63cm.
[6] 20% Assumed angled above fishway.

Recreational catches: Have ranged from 422 fish in 1984 to 115 fish in 1991, the period since the Nova Scotia license-stub return system. This river is the highest or second highest producer of fish smaller than 63 cm on Cape Breton Island.

Data and assessment: Counts and scale samples are taken at the fishway 10.2 km above the head of tide on the main river. By-pass of fish ascending the falls was estimated in 1989 at 9% for fish less than 63 cm and 43% for fish equal to or greater than 63 cm but may have been different in 1991 when flood conditions followed a prolonged drought. The 1991 by-pass rate for grilse of 43% was estimated from broodstock collected above the fishway (8 of

14 grilse were marked). Numbers below the fishway were estimated from redd counts in 1988 only.

State of the stock: The target spawning escapement for the Grand River has not been met during the past three years, based on the number of salmon estimated to be spawing above the fishway.

STOCK: Liscomb River above Liscomb Falls Fishway, SFA 20
TARGET: Under development for this acid-stressed river.

Year	1987	1988	1989	1990	1991	1992	MIN[1]	MAX[1]	MEAN[1]
Recreational catch (1SW)[a]	289	138	65	177	68	19	65	289	150
Counts:									
Wild 1SW	1614	477	532	955	586	145	477	1614	772
Wild MSW	88	76	75	44	38	27	38	117	75
Hatchery 1SW	523	431	288	438	178	125	175	766	400
Hatchery MSW	54	44	71	22	22	12	22	108	53
Total	2279	1028	966	1459	824	309	818	2279	1300
Egg deposition/m^2[b]	2.5	1.2	1.2	1.6	0.9	0.4	0.9	2.5	1.5
Return rate of hatchery smolts									
1SW(%)	2.75	1.38	0.60	1.56	0.79	0.50	0.35	2.75	1.43
MSW(%)	0.18	0.23	0.23	0.05	0.08	0.05	0.05	0.23	0.15

[1] For the period 1985-1991.
[a] below fishway
[b] above fishway

Recreational catches: No retention of MSW fish since 1984; 1SW catches (1985-1992) have ranged from 19 in 1992 to 289 in 1987.

Data and assessment: Counts of adult fish are obtained at Liscomb Falls fishway.

State of the stock: Target egg requirements according to the 2.4 eggs/m^2 have been met only once since 1979 (1987); a significant contribution to egg deposition comes from hatchery-origin fish of Liscomb River stock. The 1992 escapement resulted in egg deposition of approximately one-tenth of nominal target.

Forecast for 1993: Forecasts of 1SW returns are unavailable. An annually-updated relation between 1SW returns in year t and MSW returns in year t + 1 has become progressively less reliable over the past few years (p=0.06), and predicts a return of 30 MSW salmon (90% CI 0-94) in 1993.

STOCK: LaHave River above Morgan Falls Fishway, SFA 21
TARGET: Under development for this acid-stressed river

Year	1987	1988	1989	1990	1991	1992[1]	MIN[2]	MAX[2]	MEAN[2]
Harvest:									
Recreational -small[3]	2562	1585	2411	2008	233	1058	233	2562	1760
Counts:									
- Wild 1SW	2529	2464	2087	1861	495	1915	495	2529	1887
- Wild MSW	532	380	511	596	236	215	236	596	451
- Hatchery 1SW[4]	573	1026	443	402	109	574	109	1026	511
- Hatchery MSW[4]	79	59	183	118	90	58	59	183	106
	3713	3929	3224	2977	930	2762	930	3929	2955
Return rate of hatchery smolts:									
- 1SW (%)	2.45	3.92	1.89	1.72	0.87	1.29	0.87	3.92	2.17
- MSW (%)	0.97	0.23	0.61	0.39	0.22	0.46	0.22	0.97	0.48

[1] Preliminary data.
[2] For the period 1986-1991.
[3] Retained catch taken mostly below the enumeration site.
[4] Mostly as a result of smolt releases.

Recreational catches: Catches are for the entire river rather than only those from the stock above Morgan Falls. Retention of MSW catch since 1983 has been prohibited, but large numbers have been released after hooking.

Data and assessment: Spawner counts are made at a fishway at a natural falls, 25.3 km above tidehead.

State of the stock: Target egg requirements according to the 2.4 eggs m^{-2} (approx. 2,800 1SW and 500 MSW salmon for the entire river; 60% of the drainage is below Morgan Falls) have been exceeded except for 1991, but the adequacy of that rate under conditions of some acid stress is uncertain at this time.

Forecast for 1993: A significant regression of wild MSW counts at Morgan Falls on wild 1SW counts at Morgan Falls in the previous year (18 years) forecasts a count of 423 MSW salmon in 1993.

Conditions in 1992: River discharge during the angling season declined, but was adequate until mid-July when low flows persisted until mid-October.

STOCK: Saint John River, N.B. (above Mactaquac) SFA 23
TARGET: 29.4 million eggs (4,400 MSW and 3,200 1SW fish)

Year	1987	1988	1989	1990	1991	1992[3]	MIN	MAX	Mean
Harvest:									
Native									
- small	280	300	560	273	657	560	273[2]	657[2]	414[2]
- large	1120	1200	240	247	957	748	240[2]	1200[2]	753[2]
Recreational:									
- small	1650	1755	2304	2110	1690	2104	1151[1]	3580[1]	2256[1]
Counts:									
- 1SW	7972	9191	9587	7907	7575	7664	4140[1]	17314[1]	8859[1]
- MSW	3430	2600	4291	3919	4226	4203	2010[1]	10451[1]	5221[1]
Returns:									
- 1SW	9237	10180	10861	8804	8751	8940	4946[1]	19275[1]	10311[1]
- MSW	4832	3537	4541	4125	5215	4898	3537[1]	13916[1]	7501[1]
Spawning:									
- 1SW	7020	7810	7533	6057	5721	5128	5721[2]	7810[2]	6828[2]
- MSW	2758	1704	3491	3202	3481	3269	1704[2]	3491[2]	2927[2]
% of Target met:									
- 1SW	219	244	235	189	179	160	179[2]	244[2]	213[2]
- MSW	63	39	79	73	79	74	39[2]	79[2]	67[2]

[1] For the period 1975-1991.
[2] For the period 1987-1991.
[3] Preliminary data.

Harvests: MSW salmon have not been retained since 1984; up to 1990, 1SW landings have ranged from 311 in 1972 to 3,580 in 1976. The native fishery, lower than that of 1991, approximated the mean of the previous five years.

Data and methodology: Counts of fish obtained from the collection facility at Mactaquac Dam; returns to Dam equal counts plus estimates of down river removals. Spawners equal releases above Mactaquac minus estimates of upriver removals.

State of the stock: Target egg requirements have been met only three times in the last 15 years (1980, 1984, 1985); 1SW escapement contributed to about 6% of the target egg deposition; hatchery fish comprised 25% of 1SW and 16% of MSW returns in 1992.

Forecast: A relationship between egg depositions and wild 1SW returns indicates a return of 6,100 or 7,500 wild 1SW fish in 1993, depending on the forecast model. Another relationship between wild 1SW returns, their fork length and MSW returns including those predicted to have benefited by the moratorium on the Newfoundland commerical fishery, forecasts 3,800 or 4,400 wild MSW returns in 1993, depending on forecast model. The product of the numbers of hatchery releases and recent return rates suggest hatchery returns in 1993 of 1,900 1SW and 1,000 MSW salmon. Total 1SW returns could be 8,000 or 9,400 1SW fish; total MSW returns could be 4,800 or 5,400 MSW salmon. Zero to 15% of the forecast MSW returns could be the result of the 1992 moratorium on the Newfoundland commercial fishery. Target spawning requirements do not include approximately 400 MSW broodstock required to seed Mactaquac Hatchery or spawners required for salmon development in the Aroostook River or above Grand Falls.

Table 1: Overview of the status of Atlantic salmon in Atlantic Canada during 1992. Indices include recreational catches with estimates of catch and release, where available, for large salmon, commercial catches, and estimated returns. The data for 1992 are compared with 1991 and previous 5-year means. A "-" symbol implies a decrease by more than 10%, "+" an increase by more than 10% while "0" refers to a change of less than 10% in either direction. No statistical significance is assigned to these changes.

Zones		RECREATIONAL CATCH				ESTIMATED RETURNS				COMMERCIAL CATCH			
		SMALL		LARGE		SMALL		LARGE		SMALL		LARGE	
		1991	5-year mean	1991	5-year mean	1991	5-year mean	1991	5-year	1991	5-year mean	1991	5-year mean
NFLD	1	+	-	+	+					+	-	+	-
	2	+	-	+	+					-	-	+	-
	3	+	+										
	4	0	-			+	+	+	+				
	5	0	-			+	+	+	+				
	6	+	-										
	7	+	-										
	8	-	-										
	9	+	-			+	-	0	-				
	10	0	-			+	+	+	+				
	11	+	-			+	-	+	+				
GULF	12	+	+	+	+								
	13	+	0	+	+	+	+	+	+				
	14	+	+	+	+	+	+	+	+	-	-	-	-
	15	+	+	+	0	0	0	+	0				
	16	+	+	+	0	+	+	0	+				
	17					+		+					
	18	0	0	0	0	-	-	+	-				
S-F	19	0	-	0	-	-		-					
	20	-	-	-	-	-	-	-	-				
	21	+	-	+	-	+	0	0	-				
	22												
	23	+	+			0	-	0	+				
QUEBEC	Q1	+	+	+	0								
	2	+	+	+	+								
	3	+	+	0	-								
	5/6	+	+	+	-								
	7	-	-	+	0					+	-	-	-
	8	+	+	0	+					-	-	-	-
	9	+	+	+	-					+	+	+	+
	10	+	-	-	-								
	11	-	-	-	-					-	-	-	-

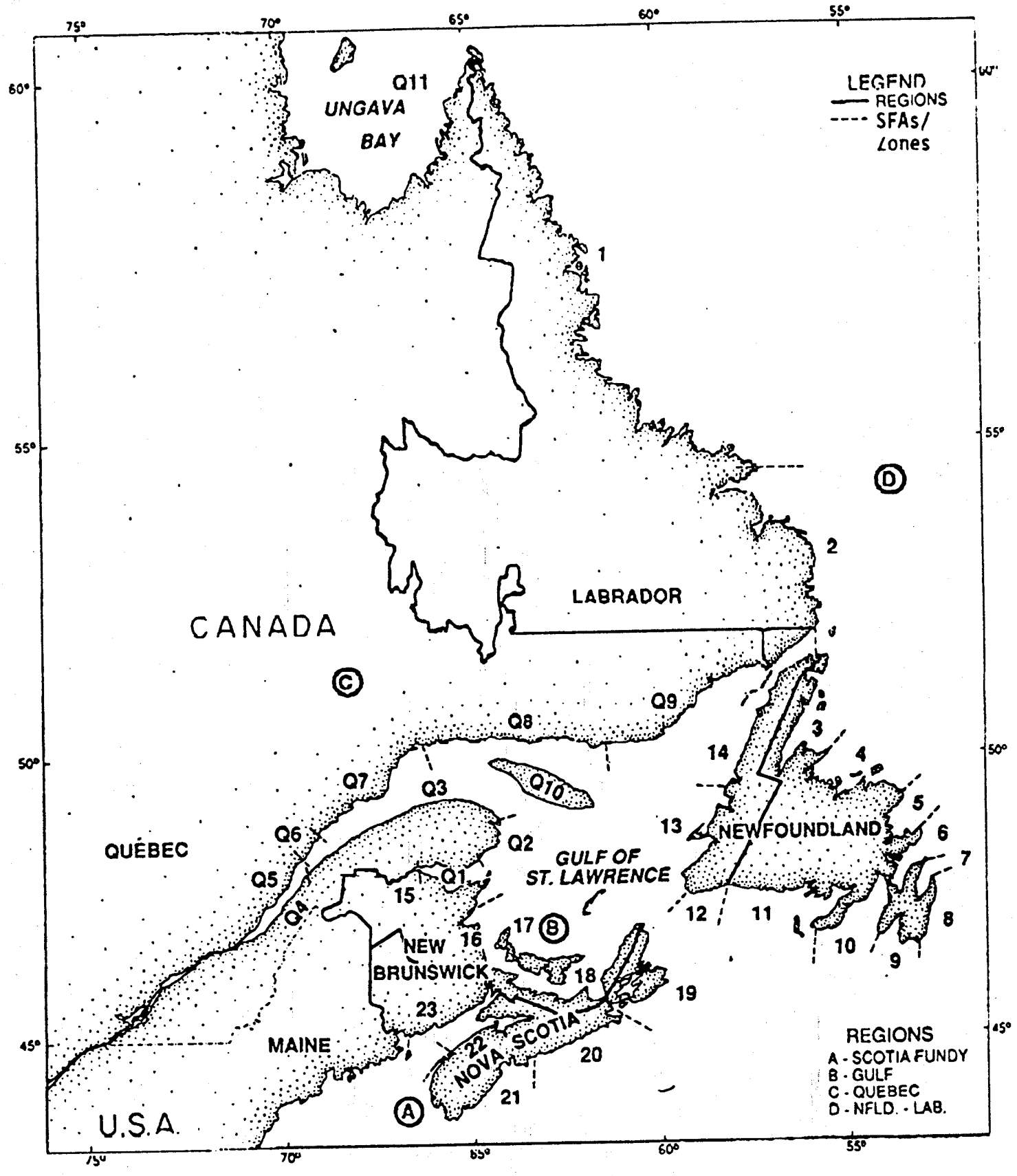


Figure 1. Map of eastern Canada showing Salmon Fishing Areas (SFAs).

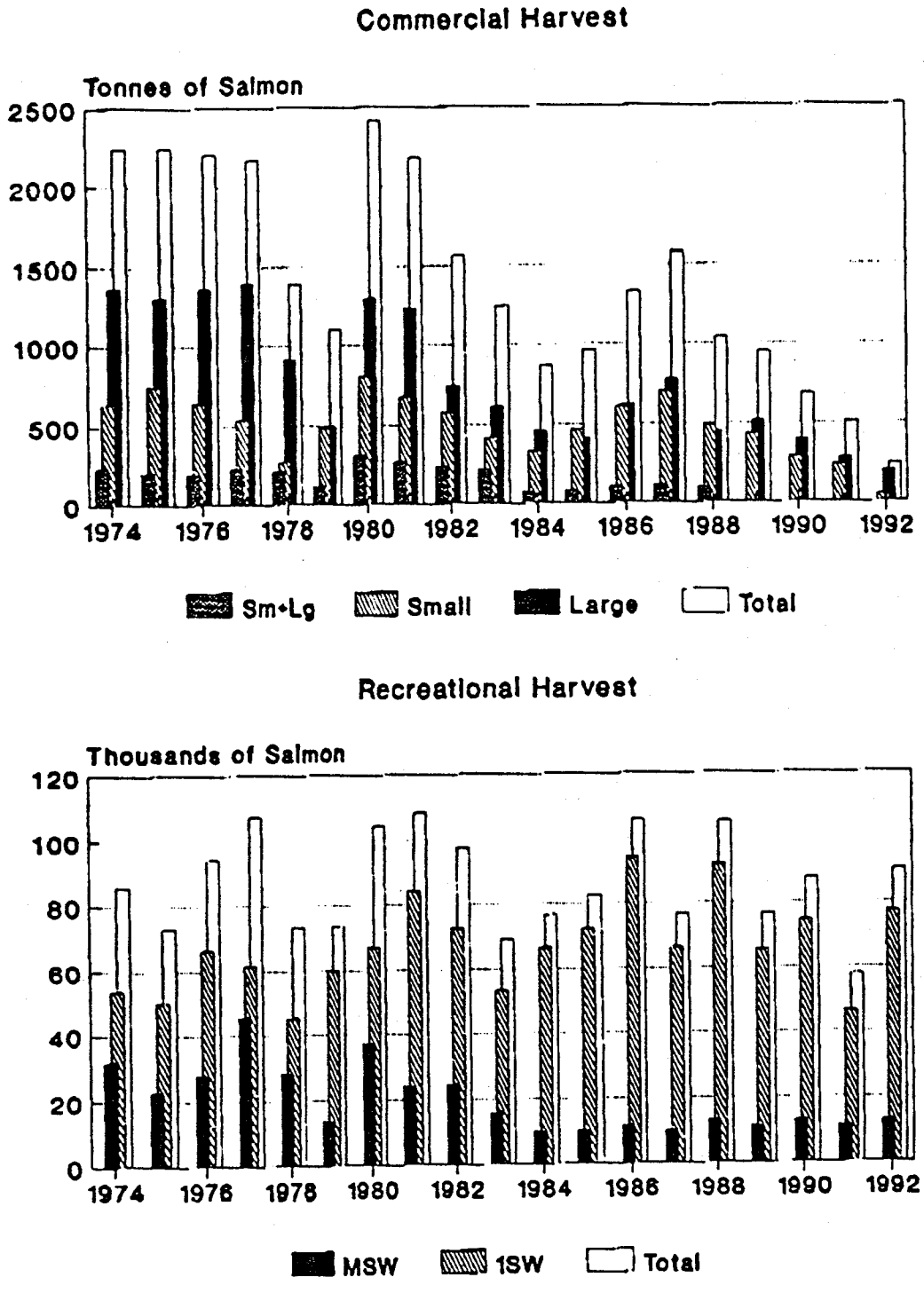


Fig. 2 . Canadian landings of Atlantic salmon, 1974-92.

ANNEX 8

NORTH AMERICAN COMMISSION

NAC(93)12

1993 ATLANTIC SALMON MANAGEMENT PLAN

Tabled by Canada

NAC(93)12

1993 ATLANTIC SALMON MANAGEMENT PLAN

Guiding Principles and Major Elements

The 1993 Atlantic Salmon Management Plan is divided into major components. This permits easier reference to the appropriate measures applicable in each geographic region and Salmon Fishing Area (SFA). Descriptions and a map of the Salmon Fishing Areas are found in appendices 1 and 2.

The News Release of the plan is contained in the first section which is followed by sections on the principles and objectives which have been adopted, after consultation with all parties involved, for the management of the salmon fishery. The next section presents the major elements contained in the 1993 Atlantic Salmon Management Plan followed by the general policies and measures regarding closures, licensing, tagging, gear and enforcement in Gulf, Scotia-Fundy, and Newfoundland regions. Specific management initiatives and guidelines for particular Salmon Fishing Areas are also included.

News Release
Communiqué

NR-HQ-93-46E **May 18, 1993**

CROSBIE ANNOUNCES 1993 ATLANTIC SALMON MANAGEMENT PLAN

OTTOWA... John C. Crosbie, Minister of Fisheries and Oceans and Minister for the Atlantic Canada Opportunities Agency, today released details of the 1993 Atlantic Salmon Management Plan. The plan builds upon management measures introduced in 1992 to restore Atlantic salmon stocks.

The Labrador commercial salmon quotas have been reduced from 215 tonnes in 1991 to 98 tonnes in 1993. An interim quota of 193 tonnes was set in 1992.

In line with conservation priorities established in the Canada-Newfoundland Commercial Salmon Licence Retirement Program, 1993 commercial salmon quotas for southern Labrador will be reduced to reflect the retirement of commercial licences in that area. Approximately 60 per cent of commercial salmon licence holders in souther Labrador have applied for the retirement offer. The reduction in quotas is based on these fishermen's receipted landings submitted under the retirement offer.

"This year's plan pursues conservation targets necessary to rebuild salmon resources in Atlantic Canada", Mr. Crosbie said. "With the ongoing cooperation of all user groups and provincial governments, we will work together to achieve this goal".

The substantial quota reduction in Labrador will support Canada's efforts within the North Atlantic Salmon Conservation Organization to achieve reductions in West Greenland interceptions of Canadian-origin salmon.

The plan involves several measures aimed at conserving and rebuilding Atlantic salmon stocks, including:

- the involvement of Native communities in rebuilding efforts through the Aboriginal Fisheries Strategy;

- salmon enhancement and habitat restoration activities as part of recreational fishery development cooperation agreements with the Atlantic provinces; and

- continued cooperative enforcement initiatives, such as the "River Watch" program, to protect salmon resources.

The Minister also noted an earlier announcement of management measures for the 1993 recreational fishery in Newfoundland and Labrador, including:

- reducing the daily retention limit from two salmon to one;

- establishing a seasonal retention limit of four large salmon in Labrador to assist stock recovery;

- dividing quotas in some areas (on a before-and-after July 31 basis) to provide retention opportunities in late-run rivers; and

- adjusting the 1993 area quotas in Labrador and the south coast of Newfoundland to more accurately reflect angling catches of recent years.

"These measures will help extend the period in which anglers can retain salmon", Mr. Crosbie said. "It will do so by spreading out the fishing effort and promoting catch-and-release fishing".

The management measures contained in the 1993 plan were developed following consultations with the Atlantic Salmon Advisory Board.

For information:

Ken Jones
Resource Allocation
Fisheries Operations
Fisheries and Oceans
Ottawa
(613) 990-9910

1993 ATLANTIC SALMON MANAGEMENT PLAN

The 1993 Atlantic Salmon Management Plan is guided by the principles adopted by the Department of Fisheries and Oceans (DFO) through consultations with the Atlantic Salmon Advisory Board and the provincial governments. It incorporates the three Regional Atlantic Salmon Management Plans which are developed in consultation with Regional and area representations from interested associations and organizations.

In the province of Quebec, the provincial government administers management plans for the salmon stocks in that province.

OBJECTIVES

The main objectives of the 1989-1993 management strategy are to ensure that target spawning requirements are met in the Maritime provinces, and that spawning levels increase in insular Newfoundland rivers. Spawning escapement targets for selected rivers are set out in Appendix 3.

PRINCIPLES

1. Conservation of Atlantic salmon stocks remains the overriding priority in the management of this fishery. This priority includes measures aimed specifically at the large salmon component in order to increase spawning escapement.

2. The importance of fishing to Aboriginal communities is recognized and is given first priority after conservation. It is DFO policy to respect and honour the Aboriginal right to fish for food, social and ceremonial purposes.

3. The Atlantic salmon fishery will be managed so as to distribute the benefits most effectively among the largest number of Canadians.

4. In the Maritime provinces, the importance of the recreational fishery is given greater recognition based on the relatively larger potential benefits to be generated. In Newfoundland and Labrador, the commercial fishery has traditionally been of greater importance. However, the recreational fishery offers considerable potential for economic benefits.

5. Allocation of Atlantic salmon stocks will be made by Salmon Fishing Area and/or river system and according to interests and/or dependence of user groups and that of industries and communities deriving benefit from the harvestable resource.

6. Interception of migrating salmon in mixed-stock fisheries will be minimized where practical and feasible, by adjusting seasons, gear and fishing area and the introduction of quotas.

7. Incidental catches of Atlantic salmon by commercial fishermen will be minimized by adjusting seasons, gear and area of fishing, and the retention of salmon caught under these circumstances will be illegal.

8. Access to Atlantic salmon stocks for commercial and recreational fisheries will be regulated by all or a combination of the following: seasons, quotas, gear and licensing restrictions. The Aboriginal Food Fishery will be in accordance with agreements made under the Aboriginal Fisheries Strategy.

9. Atlantic salmon enhancement plans and habitat restoration initiatives will be developed and undertaken under the auspices of the five-year "Canada-Newfoundland Salmonid Conservation and Enhancement Cooperation Agreement" and recreational fisheries cooperation agreements with other Atlantic Provinces.

10. Atlantic salmon habitat will be protected and improved to allow for maximum stock production.

11. The practice of tagging salmon catches will be maintained.

MAJOR ELEMENTS

1. The commercial salmon fishery for the Island portion of Newfoundland remains closed. 1993 is the second year of a five-year closure, which is a major part of the effort to rebuild depressed stocks of Atlantic salmon.

2. The 1992 program for the voluntary retirement of commercial salmon licences in the Province of Newfoundland and southern Labrador was very successful with 91 per cent of eligible licence holders applying for retirement. This included 96 per cent of the 2,572 commercial salmon fishermen in insular Newfoundland and 60 per cent of the 434 commercial salmon fishermen in southern Labrador. A similar offer may be made in 1993 for fishermen in northern Labrador (Salmon Fishing Area (SFA) 1).

3. The commercial fishery in Labrador will remain open and the season will commence on June 5, 1993. In SFA 1, the allowance of 80t is retained for this largely native, mixed salmon/char fishery. However, this allowance may be subject to change as part of a licence retirement program. The quotas for the southern Labrador commercial fishery (SFAs 2 and 14B) are reduced from 1992 levels to reflect the removal of effort as a result of commercial licence retirement. The commercial quota for southern Labrador has dropped from 215t in 1991 to 193t in 1992 and to 98t in 1993.

4. The commercial salmon fisheries in the Maritime Provinces will remain closed. The 1992 commercial licence retirement program in New Brunswick resulted in the retirement of 38 of the remaining 50 licences. A similar offer may be to the 43 licence holders remaining in Nova Scotia. Through funding, the Government of Canada is also participating in the 1993-1994 retirement program for the 62 commercial salmon fishermen on the Upper and Mid North Shore of Quebec.

5. In 1993, the Department of Fisheries and Oceans will continue zonal/river management in selected areas. This approach will be expanded to other areas of the Atlantic Provinces if evaluations of this management scheme reveal positive results.

6. Only full-time fishermen will be eligible to hold commercial salmon licences. In the future, fishermen who may be down-graded to the part-time categorization will have to regain their full-time categorization within two years in order to retain their eligibility

to their commercial salmon licence. During this two-year period, fishermen down-graded to part-time will be eligible to hold their commercial salmon licence.

7. There will be no new commercial salmon fishing licences issued on an Atlantic-wide basis.

8. Transfers of commercial fishing licences will not be permitted in the Maritime Provinces and in Newfoundland and Labrador in 1993.

9. Only the retention of grilse will be permitted in the recreational fisheries for the provinces of New Brunswick, PEI, Nova Scotia and Newfoundland (excluding Labrador). All large salmon (63 cm and greater in length) hooked by anglers will be required to be released immediately with the least possible harm to the fish. The Province of Quebec will maintain this restriction for the bordering rivers within the Restigouche system as has been done since 1984. In Labrador, a seasonal retention limit of four is established for large salmon.

10. The recreational quotas for individual Salmon Fishing Areas in Newfoundland and Labrador have been amended. In insular Newfoundland, they are set based on the three-year catch averages during the 1989 to 1991 period. For Labrador (SFAs 1,2 and 14b), they are based on two-year catch averages during the 1989-1990 period because of bad ice conditions in 1991. Once quotas are reached, the fisheries remain open to only catch and release fishing. See Appenidx 4 for table of quotas.

11. To extend the catch and retention season in Newfoundland and Labrador, the daily retention limit is reduced from 2 to 1. The quotas for Salmon Fishing Areas in insular Newfoundland have also been subdivided on a before and after July 31st basis to ensure retention opportunities in later-run rivers. See Appendix 5 for the announcement of these measures on January 29, 1993. See Appendix 6 for a table depicting the quota splits.

12. In all Atlantic Provinces, fishing limits such as seasons and quotas may be adjusted to reflect stock or environmental conditions.

13. The possession limits have been changed to correspond to the seasonal retention limits in all the Maritime Provinces (7 in P.E.I. and 8 in the others). A seasonal limit of 4 is applied to large salmon in Labrador. As noted above, the daily retention limit in Newfoundland and Labrador is reduced from 2 to 1 and the possession limit drops from 4 to 2. The daily retention limits in P.E.I., Nova Scotia and New Brunswick remain at their current level (1 in P.E.I. and 2 in the others).

14. Catch and release fishing is being encouraged. A daily catch and release limit of four salmon applies in the Atlantic Provinces. In the Maritime Provinces, anglers must stop fishing for salmon once they have retained the daily retention limit or released four salmon. In Newfoundland and Labrador, anglers must cease fishing when they have retained the daily retention limit and released four salmon.

15. During 1993, the tagging systems will be maintained in the Atlantic Provinces.

16. It will continue to be illegal to retain, or be in possession of, salmon captured incidentally in non-salmon commercial gear. Innovative low cost and efficient

enforcement activities, such as River Watch, are being undertaken. Interest groups are assisting enforcement personnel in this regard.

17. The Aboriginal Fisheries Strategy announced in 1992 (see Appendix 7) will contribute greatly to enhancing Atlantic salmon stocks. Consultations with Aboriginal communities will continue throughout Atlantic Canada with the objective of arriving at mutually acceptable plans for the exercise and management of the Aboriginal peoples food fishery. This includes advocating and assisting in the replacement of gill nets with trap nets. Native communities are being encouraged to actively participate in conservation and many Natives have been and will be trained as Fishery Guardians.

18. Aboriginal Communal Fishing Licence Regulations are a new means to manage aboriginal fishing. The Regulations provide for the issuance, by the Department of Fisheries and Oceans, of communal fishing licences to Aboriginal organizations. These new Regulations will ensure that the total harvest by all users of a fish stock does not exceed the conservation limit.

19. During 1993 and under recreational fisheries cooperation agreements, salmon enhancement and habitat restoration activities have been and will be planned and established with the active participation of the Provinces and user groups.

20. The measures taken by the Department of Fisheries and Oceans in 1993 are consistent with Canada's commitment to cooperate within the North Atlantic Salmon Conservation Organization (NASCO). As well, Canada will push for further reductions in the West Greenland interceptions of Canadian origin salmon, seek implementation of measures at NASCO which will require the reporting of all Atlantic salmon harvests and work within NASCO for the elimination of high seas interceptions of Atlantic salmon.

REGIONAL MANAGEMENT MEASURES

COMMERCIAL CLOSURES

Scotia-Fundy and Gulf Regions - SFAs 15 to 23

The Maritimes commercial salmon fishery remains closed.

Newfoundland Region - SFAs 1 to 14

The commercial salmon fishery for the Island of Newfoundland (SFAs 3 to 13 and 14A) remains closed in the second year of the five-year moratorium.

COMMERCIAL LICENSING POLICIES

Scotia-Fundy and Gulf Regions - SFAs 15 to 23

1. As the commercial salmon fishery is closed in the Maritimes, 1993 licences will be issued for record purposes only and at no cost to those 1992 licence holders that wish to retain them.

2. Transfer of licences to another individual will not be permitted in 1993.

3. Licences are not available for new entrants in this fishery.

4. Licences are only valid for the Salmon Fishing Area specified.

Newfoundland Region - SFAs 1 to 14

1. In 1993, licences may be issued to those persons who, in 1992:

   a) held commercial fishing licences; and

   b) were categorized as full-time; and

   c) are full-time residents of the Salmon Fishing Area in which they are licensed or unless otherwise specified.

   Note: Participation in the 1992 salmon fishery will not be a prerequisite to be eligible for a salmon licence in 1993. However, all fishermen will be required to renew their salmon fishing licences and meet the criteria outlined in c).

2. Licences are only valid for the Salmon Fishing Area specified.

3. Transfer of licences to another individual will not be permitted in 1993.

4. Effort limits for each licensed fisherman will remain at 200 fathoms per licence in 1993.

5. No new commercial salmon licences will be issued in 1993.

MEASURES TO PREVENT ATLANTIC SALMON BY-CATCH IN NON-SALMON COMMERCIAL GEAR

Note: In all Atlantic provinces, it will be illegal to retain or be in possession of Atlantic salmon caught by non-salmon commercial gear without authorization.

Provinces of New Brunswick, Nova Scotia and Prince Edward Island

1. Non-salmon commercial fishing gear includes all traps, weirs and gillnets used to fish for all finfish species.

2. All salmon caught incidentally in the above gear must be released immediately to the water.

3. In areas where the by-catch of salmon is significant, the commercial gear shall be re-located voluntarily and/or as instructed by a fishery officer.

Province of Newfoundland and Labrador

1. As in 1992, the incidental catch of salmon in traps and nets will be minimized by seasonal and area variations as required. In areas where the by-catch of salmon is significant, the commercial gear shall be re-located voluntarily and/or as instructed by a fishery officer.

2. In cod traps, mesh size restrictions for leaders and the prohibition of the use of monofilament will be strictly enforced. The top portion of groundfish gillnets has to be at least 5 m underneath the surface of the water.

RECREATIONAL FISHERY

1. Size restrictions - For the recreational fisheries Atlantic-wide (excluding Labrador and most of Quebec), the retention of large salmon will be prohibited (salmon 63 cm or greater in length). However, anglers will be permitted to hook and release large salmon.

   Regions will continue media programs in cooperation with anglers' associations to ensure anglers are aware of proper release methods in order to ensure that the fish are released with the least possible harm. The use of barbless hooks is encouraged.

2. Area quotas - Quotas remain in effect for each SFA in Newfoundland and Labrador to limit the overall recreational catch and allow stocks to rebuild. These quotas will help ensure the escapement of Atlantic salmon which are not taken because of the commercial closure. After the area quota is taken, closures or a hook and release only fishery will be implemented.

3. River quotas - Quotas are established for individual rivers where there are definite spawning escapement concerns and requirements. After the river quota is taken, closures or a hook and release only fishery will be implemented.

4. Catch limits - In 1993, the retention limits will be:

	N.B.	N.S.	P.E.I.	Nfld. and Labrador*
Season 8	8	7	8	
Possession	8	8	7	2 x daily limit
Daily	2	2	1	1

* In Labrador, anglers are allowed to retain 4 large salmon.

The daily and seasonal salmon retention limits do not include any salmon that are hooked and subsequently released. A daily catch and release limit of four salmon applies in the Atlantic Provinces. In the Maritime Provinces, anglers must stop fishing for salmon once they have retained the daily retention limit or released four salmon. In Newfoundland and Labrador, anglers must cease fishing when they have retained the daily retention limit and released four salmon.

Catch and release only fisheries may be implemented in areas requiring protection, but where conservation requirements do not demand total closure. Hook and release fisheries will be closed where water conditions or temperatures are likely to result in high mortality among released fish.

Catch limits which were previously restricted to lower levels because of specific conditions will be maintained as such.

In the Maritime Provinces, anglers exhausting their daily or seasonal limits will not be permitted to fish for Atlantic salmon for the remaining portion of the period associated with the limit reached.

5. Black salmon fishery - The grilse only restriction will apply again in 1993. The season remains from April 15 to May 15 in New Brunswick.

6. Seasons - The seasons remain the same as 1992 in many watersheds, with some adjustments to reflect local conditions. In some cases, the seasons may be altered to reflect further information or changing circumstances.

TAGGING PROGRAM

During 1993, the tagging systems will be maintained for the Atlantic salmon fisheries in Atlantic Canada.

Where tagging is required, salmon caught and retained by licensed salmon fishermen will be tagged by applying a self-locking, tamper-proof plastic tag through the mouth and gill cavity of the fish. Each tag number will be recorded with the licence number issued to the fisherman for immediate identification of all legally harvested salmon.

The tags will be colour coded for each fishery and the tags in Newfoundland and Labrador will be changed so that only 4 of the 8 tags can be used for large fish in Labrador.

ENFORCEMENT ACTIVITIES

Where feasible in 1993, emphasis will be placed on protection and conservation of Atlantic salmon in both the marine and freshwater environment. Particular attention will be directed to the following:

1. commercial salmon log record reporting (where applicable);

2. salmon by-catch restrictions;

3. poaching activity in inland waters;

4. fish habitat protection;

5. salmon tagging requirements;

6. strict observance of closed times and closed areas.

Programs will be in place again in 1993, or have already been established as part of the Crime Stoppers Program, to report suspected salmon poaching activities. Toll free numbers will be answered twenty-four hours a day. Consult your local Fisheries and Oceans office for details.

In Newfoundland and Labrador, other enforcement efforts include the use of volunteers in a "River Watch" program, joint enforcement patrols with other agencies and the use of specialized undercover enforcement teams during peak fishing periods.

SALMON FISHING AREAS

SFA 1 - NORTHERN LABRADOR

Commercial Fishery

Allowance - 80t

Waters	Opening/Closing Dates
All coastal waters from Cape Chidley to Fish Cove Point	June 5 - October 15

Recreational Fishery

Area quota: 800 fish

Individual quotas (Province-wide):

Season bag limit - 8 fish, of which only 4 can be large

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

Rivers	Opening/Closing Dates
All rivers running into the coastal waters between Cape Chidley and Fish Cove Point	July 2 - September 25

SFA 2 - SOUTHERN LABRADOR

Commercial Fishery

Quota - 90t

Waters	Opening/Closing Dates
All coastal waters from Fish Cove Point to Table Head, St. Peter's Bay	June 5 - October 15

Recreational Fishery

Area quota: 2,800 fish

Individual quotas (Province-wide):

Season bag limit - 8 fish, of which only 4 can be large

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Fish Cove Point and Table Head, St. Peter's Bay	June 26 - September 19

SFA 3 - WHITE BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Bauld to Cape St. John	Closed

Recreational Fishery (Grilse only)

Area quota: 1,300 fish

Area quota split*: 1,040 fish (June 19 to July 31)
260 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Bauld and Cape St. John	June 19 - September 6

*The area quota was split on an 80/20 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 4 - NOTRE DAME BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St. John to Cape Freels	Closed

Recreational Fishery (Grilse only)

Area quota: 4,800 fish

Area quota split*: 3,360 fish (June 19 to July 31)
1,440 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St. John and Cape Freels with the exception of the following:	June 19 - September 6
Indian River, including Burnt Berry Brook	June 19 - August 29
Exploits River and its tributaries	June 19 - August 29

*The area quota was split on an 70/30 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 5 - BONAVISTA BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Freels to Cape Bonavista	Closed

Recreational Fishery (Grilse only)

Area quota: 2,000 fish

Area quota split*: 1,500 fish (June 19 to July 31)
500 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Freels and Cape Bonavista with the exception of the following:	June 19 - September 6
Terra Nova River	June 19 - August 29

*The area quota was split on an 75/25 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 6 - TRINITY BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Bonavista to Grates Point	Closed

Recreational Fishery (Grilse only)

Area quota: 250 fish

Area quota split*: 150 fish (June 19 to July 31)
100 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Bonavista and Grates Point	June 19 - September 6

*The area quota was split on an 60/40 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 7 - CONCEPTION BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Grates Point to Cape St. Francis	Closed

Recreational Fishery (Grilse only)

Area quota: 50 fish

Area quota split*: 35 fish (June 19 to July 31)
15 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Grates Point and Cape St. Francis	June 19 - September 6

*The area quota was split on an 70/30 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 8 - SOUTHERN SHORE

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St. Francis to Cape Pine	Closed

Recreational Fishery (Grilse only)

Area quota: 50 fish

Area quota split*: 35 fish (June 19 to July 31)
15 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St. Francis and Cape Pine	June 19 - September 6

*The area quota was split on an 70/30 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 9 - SOUTHERN SHORE

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Pine to Cape St. Mary's	Closed

Recreational Fishery (Grilse only)

Area quota: 1,250 fish

Area quota split*: 1,125 fish (June 19 to July 31)
125 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Pine and Cape St. Mary's with the exception of the following:	June 19 - September 6
Colinet River	Closed
Rocky River	Closed

*The area quota was split on an 90/10 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 10 - PLACENTIA BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St. Mary's to Point Crewe	Closed

Recreational Fishery (Grilse only)

Area quota: 650 fish

Area quota split*: 585 fish (June 19 to July 31)
65 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St. Mary's and Point Crewe with the exception of the following:	June 19 - September 6
Northeast River, Placentia	June 19 - August 29
Southeast River, Placentia	June 19 - August 29
Tides Brook including Main Brook and Shearstick	June 19 - August 29

*The area quota was split on an 85/15 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 11 - SOUTH COAST

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Point Crewe to Fox Point, Burgeo	Closed

Recreational Fishery (Grilse only)

Area quota: 3,100 fish

Area quota split*: 2,790 fish (June 19 to July 31)
310 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Point Crewe and Fox Point, Burgeo with the exception of the following:	June 19 - September 6
Cinq Cerf River	Closed
Garnish River	June 19 - August 29

*The area quota was split on an 90/10 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 12 - SOUTHWESTERN NEWFOUNDLAND

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Fox Point, Burgeo to Cape Ray	Closed

Recreational Fishery (Grilse only)

Area quota: 700 fish

Area quota split*: 665 fish (June 5 to July 31)
35 fish (August 1 to September 6)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Fox Point, Burgeo and Cape Ray	June 5 - September 6

*The area quota was split on an 95/5 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 13 - WESTERN NEWFOUNDLAND

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Ray to Cape St. Gregory	Closed

Recreational Fishery (Grilse only)

Area quota: 5,200 fish

Area quota split*: 4,160 fish (June 5 to July 31)
1,040 fish (August 1 to September 6)

River quotas:

Barachois River - 175 fish

Fischell's Brook - 200 fish

Flat Bay Brook - 250 fish

Fox Island River - 50 fish

Harry's River (Lower & Middle) - 350 fish

Humber River (Adies Lake) - 100 fish

Serpentine River (Lower) - 150 fish

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Ray and Cape St. Gregory with the exception of the following:	June 5 - September 6
Cook's Brook	Closed
Goose Arm River	June 12 - September 6
Harry's River	June 12 - September 6
Highlands River	Closed
Hughes Brook	Closed
Humber River (Adies Lake)	June 5 - August 1
Little Barachois Brook	June 12 - September 6
Little Codroy River	June 12 - September 6
North Brook (tributary to Deer Lake on Humber River)	Closed

*The area quota was split on an 80/20 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 14A - NORTHWESTERN NEWFOUNDLAND

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St. Gregory to Cape Bauld	Closed

Recreational Fishery (Grilse only)

Area quota: 3,900 fish

Area quota split*: 2,925 fish (June 5 to July 31)
975 fish (August 1 to September 6)

River quotas:

Lomond River - 350 fish

Pincent's Brook - 10 fish

Watson's Brook - 50 fish

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St. Gregory and Cape Bauld with the exception of the following:	June 12 - September 6
Bound Brook	Closed
Parker River	July 24 - September 6
St. Genevieve River	June 5 - September 6
Ten Mile Feeder Brook (tributary to Upper St. Genevieve River)	Closed

River	Opening/Closing Dates
Torrent River	After 1,000 salmon through fishway -September 6
West River, St. Barbe	Closed
Western Brook	Closed

*The area quota was split on an 75/25 percentage basis, using the five-year mean (1985-1990) angling catch statistics.

SFA 14B - SOUTHERN LABRADOR

Commercial Fishery

Quota - 8t

Waters	Opening/Closing Dates
All coastal waters from Point Charles to Cape St. Charles	June 5 - October 15

Recreational Fishery

Area quota: 1,400 fish

Individual quotas (Province-wide):

Season bag limit - 8 fish, of which only 4 may be large

Daily bag limit - 1 fish

Possession limit - 2 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Point Charles and Cape St. Charles	June 5 - September 19

SFA 15 - RESTIGOUCHE RIVER SYSTEM

Commercial Fishery

The commercial salmon fishery remains closed in the New Brunswick portion of the Restigouche River system. There is no commercial fishing in the Quebec portion of this watershed.

By-catch

Further to imposing the restriction of no salmon by-catch throughout the Atlantic, regulations to eliminate by-catch in non-salmon commercial gear will apply in SFA 15:

a) No person shall set or use any gillnet in those waters of the Chaleur Bay that are closed to gillnetting of any kind between June 8 to December 31 in any year.

b) Groundfish gillnets bait permits will be issued for 1993 in the waters of Bay of Chaleur, on a controlled basis only.

Recreational Fishery (Grilse Only)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 8 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
SFA 15 and all waters of the Province flowing into that SFA, except the following:	June 1 - October 15
Eel River	July 1 - October 15
Nepisiguit River*	June 1 - October 7
Restigouche River	June 1 - August 31

River	Opening/Closing Dates
Kedgwick River	June 1 - August 31

* Except the waters from the mouth of the Big South to the mouth of Indian Falls Brook and the waters from the head of Pabineau Falls Pool downstream a distance of 45 metres, which are closed from May 1 to December 31.

SFA 16 - MIRAMICHI RIVER

Commercial Fishery

The commercial salmon fishery remains closed.

By-catch

General measures to eliminate Atlantic salmon by-catch in non-salmon commercial gear will apply. The following measures will also apply in SFA 16:

a) An area closure to groundfish gillnetting will apply to Canadian fisheries waters off the coast of New Brunswick west of a line beginning at Pointe à Barreau, Northumberland County, at 47°26'00"N latitude, 64°53'01"W longitude, thence to a point at 47°04'24"N latitude, 64°21'45"W longitude, thence to a point on the shoreline of Kent County at 47°00'48"N latitude, 64°49'40" longitude.

b) An area closure to gillnetting of any kind will apply to those waters of the Miramichi Bay lying to the west of a line drawn from the lighthouse on Escuminac Point to a point at Pointe à Barreau at latitude 47°26'00"N. and longitude 64°53'12"W.

c) Groundfish gillnet bait permits will not be issued in 1993 for a bait fishery in the waters of the Miramichi Bay.

Recreational Fishery (Grilse Only)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 8 fish

Hook and release - 4 fish

Seasons

Black Salmon

River	Opening/Closing Dates
Miramichi River	April 15 - May 15

Bright Salmon

River	Opening/Closing Dates
SFA 16 and all waters of the Province flowing into that SFA, except the following:	June 8 - October 7
Bartholomew River	June 8 - October 15
Bartibog River	June 1 - October 15
Cains River	June 8 - October 15
Dungarvon River (and tributaries) above the mouth of Underwood Brook	June 8 - September 15
Dungarvon River below the mouth of of Underwood Brook	June 8 - October 15
Little Southwest Miramichi (and tributaries) above Catamaran Brook	June 8 - September 15
Little Southwest Miramichi below Catamaran Brook	June 8 - October 15
Main Southwest Miramichi from head of tide upstream to Burnt Land Brook	June 8 - October 15
Main Southwest Miramichi from the mouth of Burnt Land Brook upstream to the fork of the North and South Branches	June 8 - September 30
Renous River (and tributaries) above the Forks	June 8 - September 15
Renous River below the Forks	June 8 - October 15
Rocky Brook, Southwest Miramichi	June 1 - August 31

River	Opening/Closing Dates
Sevogle River above Square Forks	June 8 - September 15
Sevogle River below Square Forks	June 8 - October 15
Tabusintac River	July 1 - October 21
Tributaries of main Southwest Miramichi above Cains River, except Rocky Brook	June 8 - September 15
Bay du vin River	June 8 - October 31
Richibucto River	June 8 - October 31
Kouchibouguac River	June 8 - October 31
Kouchibouguacis River	June 8 - October 31
Black River	June 8 - October 31
North and South Branches of Main Southwest Miramichi River	June 8 - September 15
Northwest Miramichi River including tributaries, upstream of Little River	June 8 - August 31
Northwest Miramichi River below Little River	June 8 - October 15

SFA 17 - PRINCE EDWARD ISLAND

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Individual quotas (Province-wide):

Season bag limit - 7 fish

Daily bag limit - 1 fish

Possession limit - 7 fish

Hook and release - 2 fish

Seasons

River	Opening/Closing Dates
All PEI rivers with the exception of the following:	June 15 - September 30
Morell River, except for Lairds Pond	June 1 - October 31
Lairds Pond	June 1 - November 30

SFA 18 - NORTHUMBERLAND

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 8 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
All waters of the SFA 18, with the exception of the following:	September 1 - October 31
Northeast Margaree River, downstream from the Big Intervale Bridges to the Cranton Bridge	June 1 - October 15
Northeast Margaree River, not including tributaries, downstream from the Cranton Bridge to the Highway Bridges at East Margaree	June 1 - October 31
Southwest Margaree River, not including tributaries, downstream from the Scottsville Highway Bridge to the main Margaree River	June 1 - October 15
Northeast Margaree River (upstream from the Big Intervale Bridges)	Closed

SFA 19 - CAPE BRETON EAST

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 8 fish

Hook and release - 4 fish

Seasons

Rivers	Opening/Closing Dates
All the waters of any rivers and tributaries which flow into the Atlantic Ocean bounded by Cape Breton and Richmond Counties and that portion of Victoria County south of cape North, with the exception of the following:	June 1 - October 25
Catalone River	June 1 - September 30
Framboise River	June 1 - September 30
Gaspereau River	June 1 - September 30
Gerratt Brook	June 1 - September 30
Grand River	June 1 - September 30
Lorraine Brook	June 1 - September 30
Marie Joseph River	June 1 - September 30
Mira River	June 1 - September 30
North River, upstream from The Benches	Closed
Salmon River	June 1 - September 30

SFA 20 - EASTERN SHORE

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession Limit - 8 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
All waters of SFA 20 with the exception of the following:	June 1 - August 29
All rivers and tributaries thereof that flow into that portion of Chedabucto Bay bounded by Guysborough County	June 24 - September 22
Country Harbour River	June 24 - September 22
St. Mary's River	June 1 - September 15

SFA 21 - SOUTHWEST NOVA SCOTIA

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 8 fish

Hook and release - 4 fish

Seasons

Rivers	Opening/Closing Dates
All the waters of the rivers and tributaries which flow into that portion of the Atlantic Ocean bounded by Lunenburg, Queens, Shelburne, Yarmouth and Digby Counties and that portion of Halifax County west of the city of Halifax with the following exceptions:	May 10 - August 15
Clyde River	May 10 - September 30
Ingram River	June 1 - August 15
Lahave River, upstream from Morgan Falls except between the bridge (Varner's Bridge #2) on Lower Branch Road in New Germany and Cherryfield Bridge in Cherryfield	Closed
Medway River	May 10 - July 31
Mersey River, downstream from Cowie Falls	September 1 - September 30
Meteghan River	August 1 - September 30
Petite Rivière	June 15 - August 15

Rivers	Opening/Closing Dates
Salmon River	June 1 - August 15
Tusket River	June 1 - August 15

SFA 22 - UPPER BAY OF FUNDY

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Individual quotas (Province-wide):

Season bay limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 8 fish

Hook and release - 4 fish

Seasons

Rivers	Opening/Closing Dates
All the waters of any rivers and tributaries which flow into that portion of the Bay of Fundy bounded by Annapolis, Kings, Hants, Colchester and Cumberland Counties with the following exceptions:	Dates to be announced depending on counts on index rivers and after consultations with users
Annapolis River	May 10 - August 15
Bear River	August 15 - October 31
Cornwallis River	August 15 - October 31
Gaspereau River	May 15 - August 15
Lequille River	August 15 - October 31
Nictaux River	August 15 - October 31
Paradise River	August 15 - October 31
Round Hill River	August 15 - October 31

SFA 23 - SOUTH WESTERN NEW BRUNSWICK

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Individual quotas (Province-wide):

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 8 fish

Hook and release - 4 fish

Seasons

Black Salmon

The season opens on April 15 and closes on May 15.

Bright Salmon

The following seasons are tentative. They are based on the 1992 seasons and may be changed after further consultations.

River	Opening/Closing Dates
Waters tributary to the Bay of Fundy with the following exceptions:	June 1 - October 15
Big Salmon River - upstream of and including Walton Dam Pool	Closed
Big Salmon River - downstream from Walton Dam Pool	Closed
Hammond River - downstream from the mouth of Bradley Brook	June 1 - October 31
Hammond River - upstream from the mouth of Bradley Brook	June 1 - October 15
Kennebecasis River - upstream from the mouth of Trout Creek	June 1 - September 30

River	Opening/Closing Dates
Kennebecasis River - downstream from the mouth of Trout Creek	June 1 - October 15
Nashwaak River - upstream from the bridge at Stanley	June 1 - September 30
Nashwaak River - downstream from the bridge at Stanley	June 1 - October 15
St. John River - upstream from the Grafton Bridge at Woodstock	June 1 - September 30
St. John River - downstream from the Grafton Bridge at Woodstock	June 1 - October 15
Petitcodiac River	Closed all year
Point Wolfe River	Closed all year
St. Croix River	June 1 - September 15
Tobique River	June 1 - September 15

APPENDIX 1

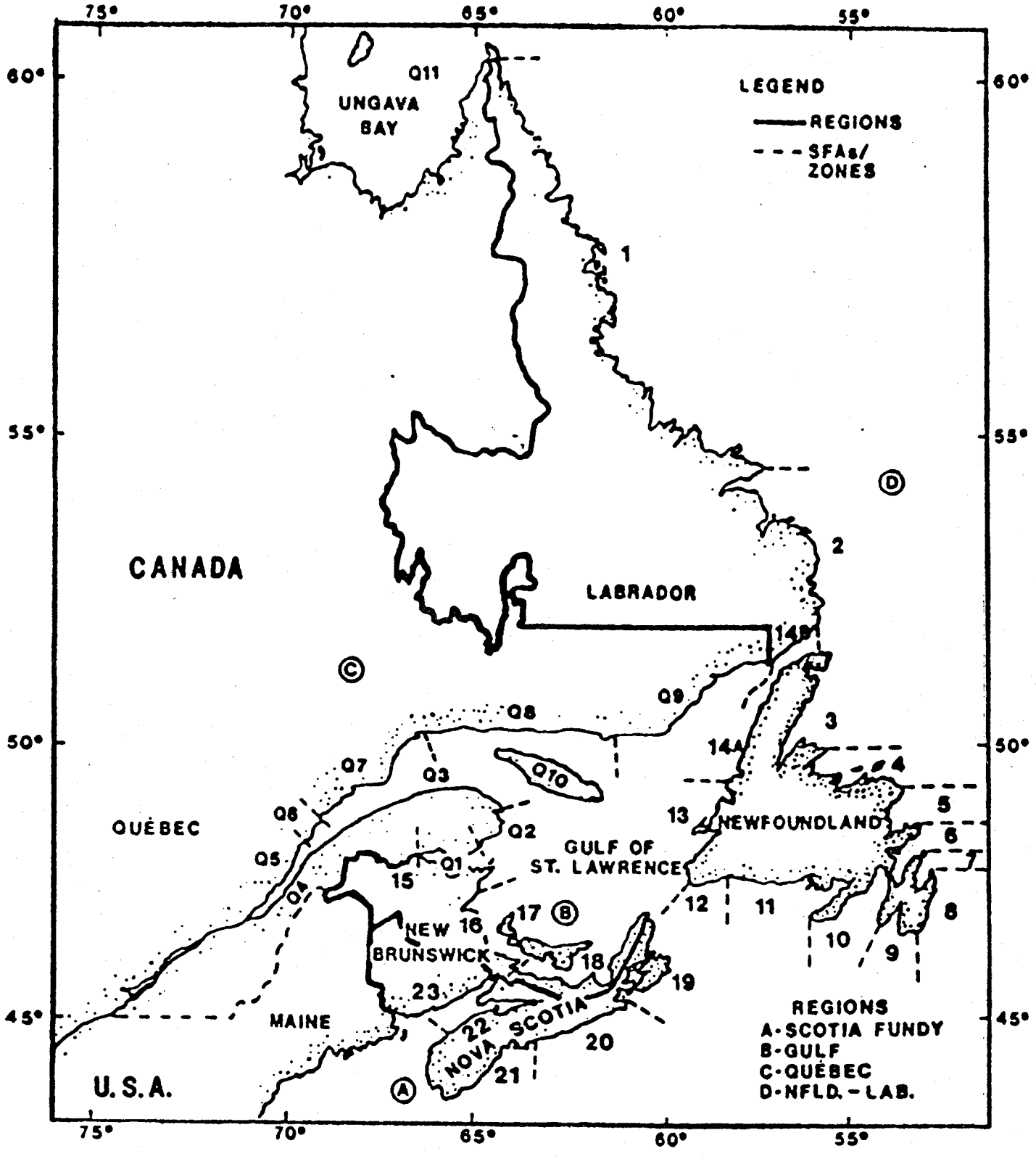
SALMON FISHING AREAS (SFA)

SFA			PROVINCE	REGION
1	-	Cape Chidley to Fish Cove Point	Newfoundland	Newfoundland
2	-	Fish Cove Point to Table Head, St. Peter's Bay	Newfoundland	Newfoundland
3	-	Cape Bauld to Cape St. John	Newfoundland	Newfoundland
4	-	Cape St. John to Cape Cape Freels	Newfoundland	Newfoundland
5	-	Cape Freels to Cape Bonavista	Newfoundland	Newfoundland
6	-	Cape Bonavista to Grates Point	Newfoundland	Newfoundland
7	-	Grates Point to Cape St. Francis	Newfoundland	Newfoundland
8	-	Cape St. Francis to Cape Pine	Newfoundland	Newfoundland
9	-	Cape Pine to Cape St. Mary's	Newfoundland	Newfoundland
10	-	Cape St. Mary's to Point Crewe	Newfoundland	Newfoundland
11	-	Point Crewe to Fox Point, Burgeo	Newfoundland	Newfoundland
12	-	Fox Point, Burgeo to Cape Ray	Newfoundland	Newfoundland
13	-	Cape Ray to Cape St. Gregory	Newfoundland	Newfoundland

SFA			PROVINCE	REGION
14A	-	Cape St. Gregory to Cape Bauld	Newfoundland	Newfoundland
14B	-	Point Charles to Cape St. Charles	Newfoundland	Newfoundland
15	-	Restigouche	New Brunswick	Gulf
16	-	Miramichi	New Brunswick	Gulf
17	-	P.E.I.	P.E.I.	Gulf
18	-	Northumberland	Nova Scotia	Gulf
19	-	Cape Breton East	Nova Scotia	Scotia-Fundy
20	-	Eastern Shore	Nova Scotia	Scotia-Fundy
21	-	Southwest Nova Scotia	Nova Scotia	Scotia-Fundy
22	-	Upper Bay of Fundy	Nova Scotia	Scotia-Fundy
23	-	Saint-John	New Brunswick	Scotia-Fundy

APPENDIX 2

MAP SHOWING SALMON FISHING AREAS



APPENDIX 3

SPAWNING ESCAPEMENT REQUIREMENTS FOR SELECTED RIVERS

SFA	RIVER	MSW REQUIRED	GRILSE REQUIRED
4	Exploits	-	56,670
4	Gander	-	21,828
5	Middle Brook	-	1,012
5	Terra Nova	-	7,094
9	Rocky River	-	881
9	Biscay Bay	-	1,134
10	Northeast	-	224
10	Conne	-	4,000
15	Restigouche	12,200	2,600
15	Eel	173	37
15	Nepisiguit	1,363	654
16	Tabusintac	334	320
16	N.W. Miramichi	7,256	6,949
16	S.W. Miramichi	15,843	15,172
16	Tributaries to main stem of Miramichi	501	479
16	Miramichi (Total)	23,600	22,600
16	Richibucto	526	504
16	Buctouche	191	183
17	Morell	156	47
18	East (Pictou)	281	59
18	Pomquet/Afton	70	-
18	West (Antigonish)	114	-
18	South	70	-
18	Margaree	1,036	582

SFA	RIVER	MSW REQUIRED	GRILSE REQUIRED
19	Grand	100	440
19	Middle	470	80
19	Baddeck	450	80
19	North	200	30
20	Musquodoboit	400	400
22	Shubenacadie	130	350
22	Stewiacke	310	800
23	Big Salmon	420	280
23	Saint John (Mactaquac & above)	4,400	3,200
23	Nashwaak	1,800	1,700

APPENDIX 4

TABLE DEPICTING AREA QUOTAS FOR NEWFOUNDLAND AND LABRADOR

SALMON FISHING AREA	1992 QUOTAS	3-YEAR† AVERAGE CATCH LEVEL	2-YEAR* AVERAGE CATCH LEVEL	1993 QUOTAS
1	442	442	800	**800**
2	2,160	2,160	2,800	**2,800**
3	1,300	1,260		**1,300**
4	4,800	4,780		**4,800**
5	2,000	1,960		**2,000**
6	200	255		**250**
7	40	50		**50**
8	0	65		**50**
9	600	1,247		**1,250**
10	200	654		**650**
11	1,700	3,086		**3,100**
12	600	705		**700**
13	5,000	5,228		**5,200**
14A	3,900	3,893		**3,900**
14B	1,100	1,192	1,400	**1,400**
TOTAL	**24,042**	**26,977**	**5,000**	**28,250**

† 1989 to 1991 inclusive.

* Only 2-year (1989-1990) period used for Labrador Salmon Fishing Areas because of bad ice conditions in 1991.

APPENDIX 5

New Release
Communiqué

FOR IMMEDIATE RELEASE
January 29, 1993

NR-HQ-93-13E

Crosbie announces new management measures for the 1993 salmon angling season in Newfoundland and Labrador

GOOSE BAY, LABRADOR... John C. Crosbie, Minister of Fisheries and Oceans and Minister for the Atlantic Canada Opportunities Agency, today announced new management measures for the 1993 salmon angling season in Newfoundland and Labrador.

"The measures I am announcing today were developed following consultations with commercial outfitters, the Salmonid Council of Newfoundland and Labrador and the provincial government", said Minister Crosbie. "A federal/provincial working group also was struck and several meetings were held to explore improvements for the 1993 fishery".

The following measures will be introduced for the 1993 season:

- reducing the daily retention limit in Newfoundland and Labrador from two salmon to one.

- establishing a seasonal retention limit of four large salmon in Labrador to assist in stock recovery.

- dividing quotas in some areas (on a before-and-after July 31 basis) to provide retention opportunities in late-run rivers.

- adjusting 1993 area quotas in Labrador and the south coast of Newfoundland to more accurately reflect angling catches of recent years.

Quotas for 1993 will be set based on three-year catch averages (1989-1991), including those for Salmon Fishing Areas 9-12 on the south coast of Newfoundland. The 1992 quotas for these areas were set at very low catch levels due to low water levels in 1991. Returns in 1992 were higher than predicted.

In Labrador, a two-year catch average (1989-90) will be used to set 1993 quotas. This will correct for the effects of drastic ice conditions on anglers' catches in 1991. Returns in 1992 were higher than predicted and justify increased quotas.

"These measures should help extend the period in which anglers can retain salmon by spreading out fishing effort and promoting catch-and-release fishing", said Mr. Crosbie. "Lodge operators and outfitters can assist in this effort by encouraging clients to practice catch-and-release fishing throughout the season".

These new management measures will be included in the 1993 Atlantic Salmon Management Plan which will be announced before the salmon fishing season opens in June.

For information:

Ken Jones
Resource Allocation
Fisheries Operation
Ottawa
(613) 990-9910

Berkley Slade
Staff Officer - Salmon
Fisheries and Oceans
St John's
(709) 772-2643

APPENDIX 6

TABLE DEPICTING QUOTA SPLITS IN INSULAR NEWFOUNDLAND

SALMON FISHING AREA	1993 QUOTA	QUOTA TO JULY 31 (INCL.)	% QUOTA TO JULY 31	QUOTA AFTER JULY 31	% QUOTA AFTER JULY 31
3	1,300	1,040	80	260	20
4	4,800	3,360	70	1,440	30
5	2,000	1,500	75	500	25
6	250	150	60	100	40
7	50	35	70	15	30
8	50	35	70	15	30
9	1,250	1,125	90	125	10
10	650	585	90	65	10
11	3,100	2,790	90	310	10
12	700	630	90	70	10
13	5,200	4,160	80	1,040	20
14A	3,900	2,925	75	975	25

APPENDIX 7

News Release
Communiqué

NR-HQ-092-73E

FOR IMMEDIATE RELEASE
SEPTEMBER 9, 1992

CROSBIE ANNOUNCES ABORIGINAL FISHERIES STRATEGY IN ATLANTIC CANADA

OTTAWA... John C. Crosbie, Minister of Fisheries and Oceans and Minister for the Atlantic Canada Opportunities Agency, today announced funding for Aboriginal groups in Atlantic Canada under the strategy recently announced by the Department of Fisheries and Oceans (DFO). Contributions totalling more than $23 million will be made under the Aboriginal fisheries strategy over the next seven years.

Designed to provide economic opportunities to Aboriginal groups in coastal areas of Canada, the strategy will contribute substantially to enhancing Atlantic salmon stocks. In addition, it responds to the Supreme Court of Canada's decision in the Sparrow case, which recognized an Aboriginal right of access to the fishery for food, social and ceremonial purposes, subject to conservation.

"The federal government is committed to accelerating the resolution of Aboriginal fishery issues in a non-confrontational manner", Mr. Crosbie said. "But we are also committed to the non-Native fishery sector, to ensure that its representatives are consulted and involved in this process".

Native communities in Atlantic Canada will receive about $4.1 million this year for their participation in the Aboriginal fisheries strategy.

Among the many activities to be carried out under the strategy are: conservation, protection and management of fishing undertaken by Aboriginal bands; evaluation of the fisheries resource at selected sites; taking of samples, examination of fish, tagging of Atlantic salmon and release of all fish except salmon grilse that Natives are authorised to capture; and development and maintenance of effective harvest management systems.

"We first must meet our obligations to Aboriginal people. We also must have a commercial fishery that is profitable and stable. As well, we need to protect and encourage the sportfishery that provides employment in many goods and services sectors as well as recreation and enjoyment to many thousands. It is not one or another that we aim for, but all together".

In New Brunswick, members of the Maliseet Fisheries Management Federation, the Kingsclear Band and Micmac Bands are receiving more than $2.6 million.

In Nova Scotia, contributions of more than $800,000 have been made to six Native Bands and organizations in the province. Included are Bands on Cape Breton Island and on the mainland.

In Quebec, $200,000 has been set aside for Aboriginal groups this year.

A major aspect of the strategy in the Atlantic region is the Native fishery Guardian programs that Bands will be setting up in collaboration with DFO. Guardians will be trained to monitor Native fisheries, collect harvest data, conduct patrols with DFO staff over the area of the Native fishery and report on fishery activities.

In Newfoundland and Labrador, the Labrador Inuit Association and the Conne River Micmac Band are receiving a total of $59,000 to set up Guardian programs. Prince Edward Island's Lennox Island Indian Band is receiving $25,000 for such a program and negotiations are well advanced with other groups in both provinces.

"These programs are going to be a great help to DFO in evaluating salmon stocks in the Atlantic region", Mr. Crosbie said.

Many agreements covering fishery-related activities will be reached under the Aboriginal fisheries strategy, tailored to meet the diverse aspirations and opportunities of First Nations groups on Canada's Atlantic and Pacific coasts and in the North. Over seven years, the total federal expenditure under the strategy is expected to reach $40 million.

The components of the strategy consist of negotiated one-year and multi-year agreements with Native communities for harvest, fisheries management and development. Projects, submitted to the DFO, address resource management priorities and are managed jointly.

ANNEX 9

COUNCIL

CNL(93)50

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

CNL(93)50

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

1. With respect to Atlantic salmon in each Commission area, where relevant:

   a) describe the events of the 1993 fisheries with respect to catches (including unreported catches), gear, effort, composition and origin of the catch and rates of exploitation;
   b) describe the status of the stocks occurring in the Commission area, and where possible evaluate escapement against targets;
   c) specify data deficiencies and research needs.

2. Evaluate the following management measures on the stocks and fisheries occurring in the respective Commission areas:

   a) quota management and closures implemented after 1991 in the Canadian commercial salmon fisheries;
   b) the suspension of commercial fishing activity at Faroes.

3. With respect to the fishery in the West Greenland Commission area:

   a) continue the development of the model used in providing advice on catch quotas in relation to stock abundance;
   b) estimate the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery;
   c) provide catch options with an assessment of risks relative to the management objective of achieving various levels of target spawning escapement;
   d) describe which stocks make the greatest numerical contributions of salmon to the fishery;
   e) evaluate the relationship between spawning escapement and subsequent pre-fishery abundance.

4. Evaluate the abundance of fish farm escapees and sea-ranched fish in fisheries and rivers and the genetic, disease and parasite, ecological and environmental impacts of these fish on the wild stocks and any impacts from current hatchery practices.

5. Evaluate grilsification mechanisms and assess the impact that grilsification may have on stock abundance and future spawning requirements.

6. Evaluate evidence for recruitment overfishing occurring on Atlantic salmon populations.

7. Evaluate the prospects of developing predictive models of annual migration and distribution of Atlantic salmon stock complexes.

8. Evaluate the results of the research programme at the Faroes.

9. With respect to Atlantic salmon in the NASCO area, provide a compilation of microtag, finclip and external tag releases by ICES Member Countries in 1993.

ANNEX 10

NORTH AMERICAN COMMISSION

PAPER NAC(93)7

NASCO TAG RETURN INCENTIVE SCHEME

1993 PRIZES

The draw for the winners in the North American Commission was made by the Auditor at NASCO Headquarters on 28 May 1993. At the Tenth Annual Meeting of the Commission in Edinburgh, the Chairman of the Commission, Mr Jean-Paul Duguay, announced the winners:

First prize - $1500 - Greg Archer, 726 William Street Ext., Portland, Connecticut 06480

Second prize - $1000 - Allan O'Blenis, 121 Harvey Road, Riverview, New Brunswick E1B 2K2

Third prize - $500 - Robert Harris, 9 Bathgate Street, Glace Bay, Nova Scotia B1A 1A3

Fourth prizes - $100 - Theodore Stewart Jr, Box 106 RR#2, Red Bank, New Brunswick E0C 1WO

Nelson Poirier, P O Box 25091, Moncton, New Brunswick, E1C 9M9

Tom Wright, 228 Jacqueline Drive, Chatham, New Brunswick E1N 3R6

Robert Cloutier, 15 Edinburgh Drive, Bedford, New Hampshire 03110

Glendon Lovelace, RR#1, Boiestown, New Brunswick EOH 1AO

Rupert McNeill, Makkovik, Labrador AOP 1JO

James C Furlong, Howard Road, RR#1, Upper Blackville, New Brunswick EOC 2CO

Francis Hanson, General Delivery, Burtts Corner, New Brunswick EOJ 2BO

Catherine Lunney, 224 Randall Drive, Riverview, New Brunswick E1B 2V2

The Commission offers its congratulations to the winners.

ANNEX 11

NORTH AMERICAN COMMISSION

NAC(93)4

SALMON FISHERIES ON ST PIERRE ET MIQUELON

NAC(93)4

SALMON FISHERIES ON ST PIERRE ET MIQUELON

1. At its Seventh Annual Meeting the Commission requested the Secretary to pursue efforts to obtain information about the salmon fisheries on St Pierre et Miquelon. In accordance with this request I contacted the Ministère de la Mer in Paris with a view to obtaining information on the salmon fisheries according to the format agreed by the North Atlantic Salmon Working Group (CM1988/Assess:16 and CM1988/M:4).

2. I have now received provisional catch data for 1992. The official time series of information as provided by the Ministère de la Mer is therefore as follows:

	Number	Weight (Tonnes)
1987	442	0.984
1988	813	2.084
1989	971	2.590
1990	884	1.889
1991	573	1.132
1992	1049	2.319

3. I also asked the Ministère de la Mer for a copy of the regulations for St Pierre et Miquelon (Appendix 1) concerning the management and conservation of fishery resources. These include provisions concerning licensing, quotas and gear. With regard to salmon a minimum mesh size of 125mm is permitted and the minimum size of salmon which can be retained is 48cm.

Secretary
Edinburgh
27 April 1993

SECRETARIAT D'ETAT A LA MER
[DEPARTMENT OF STATE FOR THE SEA]

Decree Nº 87-182 of 19 March 1987 establishing measures for the management and conservation of fisheries resources in the territorial waters and economic zone off the coasts of Saint-Pierre-et-Miquelon

NOR: MERP8700010D

The Prime Minister,

On the report of the Keeper of the Seals, Minister of Justice, the Minister for Overseas Departments and Territories and the Secretary of State for the Sea,

Considering the Decree of 9 January 1852 on the prosecution of sea fishing, amended in particular by Laws Nº 85-542 of 22 May 1985 and Nº 86-2 of 3 January 1986, and in particular article 3 thereof;

Considering Law Nº 76-655 of 16 July 1976 regarding the economic zone off the coasts of the Republic and Decree Nº 77-169 of 25 February 1977 in respect of its application to the creation of an economic zone off the coasts of the Department of Saint-Pierre-et-Miquelon;

Considering Law Nº 85-595 of 11 June 1985 regarding the status of the archipelago of Saint-Pierre-et-Miquelon;

Considering Ordinance Nº 77-1108 of 26 September 1977 extending the legislation on navigation and sea fishing to the Department of Saint-Pierre-et-Miquelon;

Considering Decree Nº 72-692 of 25 July 1972 publishing the agreement on reciprocal relations between France and Canada on fishing, by an exchange of letters signed in Ottawa on 27 March 1972;

Considering the Penal Code, in particular article R.25 thereof;

Considering the opinion of the General Council of Saint-Pierre-et-Miquelon dated 28 January 1987;

Having heard the Council of State (public works section),

Decrees:

Article 1

The present Decree is applicable in the territorial waters of Saint-Pierre-et-Miquelon and the economic zone situated off the said archipelago.

CHAPTER 1
Fishing Regime

Article 2

Engagement in the activities of trawling, dredging or the setting of nets is subject to the granting of an annual licence for each vessel from which such activities are carried on.

Licences are issued by the Ministry with responsibility for maritime fisheries or by the Commissioner of the Republic for vessels engaged in salmon fishing and are valid for one calendar year.

The Minister may, having regard to the fisheries resources, limit the number of licences granted and allocate them on the basis of:

a) The total catch set-asides permitted in the waters defined in article 1 and the distribution thereof by quotas as stated in article 5 below;

b) The length, power and tonnage of the vessels in respect of which application is made for a licence;

c) And, as a subsidiary consideration, previous conditions of the fishing activities in the said waters.

Fishing with trawls, dredges or nets is prohibited on board vessels not in possession of a licence.

Article 3

An application for a licence must be made by the French or foreign shipowner or fisherman to the issuing authority at least sixty days prior to the start of the period of validity. It must include:

a) The name and address of the applicant and, where appropriate, the name of the company;

b) The name and registration number of the vessel in respect of which application is made;

c) The name and address of the captain;

d) The characteristics of the vessel and fishing gear used;

e) An undertaking by the applicant and the captain to allow an observer on board.

The licence may be revoked if this information proves to be inaccurate or if the signed undertaking is not met.

The application must also mention the places and times of the activity envisaged and an estimate of the catches expected.

Article 4

An observer may be appointed by the Administrator of Maritime Affairs for the district of Saint-Pierre-et-Miquelon to sail on vessels holding a licence. He monitors the fishing operations and reports to the Administrator. For this purpose, he has authority to communicate with the Administrator whenever he so requires.

Article 5

To ensure the management and conservation of the fisheries resources, the Minister responsible for maritime fisheries can, by an Order given after advice from the French Research Institute for Marine Exploitation, establish the total catch set-asides permitted. These set-asides are valid for one calendar year.

The Minister may distribute these set-asides in a quota allocated to French fishing boats and one or more quotas allocated to foreign fishing boats. He determines the species or groups of species subjected to the provisions of the present article.

Article 6

Fishermen engaging in their activity on a species or group of species for which the set-aside is thus limited must keep a Fishing Log in which the quantities caught and kept on board, the dates and places of the catches and the fishing gear used are entered.

They must also declare to the Administrator of Maritime Affairs for the district of Saint-Pierre-et-Miquelon:

a) When they enter or leave the waters defined in article 1, and the quantities of fish carried on board;

b) Each week, the quantities fished;

c) The quantities landed or transhipped.

An Order of the Minister responsible for maritime fisheries determines the methods of application of the present Article.

Article 7

If a fishing quota is exhausted, this is established by an Order of the Minister with responsibility for maritime fisheries. This Order results in the prohibition of fishing for the species or group of species by the fishing boats concerned.

Article 8

It is prohibited to trawl or dredge within 3 miles from the coasts of the Saint-Pierre-et-Miquelon archipelago and the "Veaux marins" rocks.

To ensure the management and conservation of the fisheries resources, the Minister with responsibility for maritime fisheries may, by an Order:

a) Prohibit fishing for certain species, the use of certain vessels and the use of certain types of fishing gear in the territorial waters situated around the Saint-Pierre-et-Miquelon archipelago;

b) Limit fishing for salmon, scallops, Chlamys Islandica and lobster in certain periods of the year and in certain areas, and determine the characteristics of the vessels, methods of fishing and gear permitted.

CHAPTER II
Technical Regulations

Article 9

It is prohibited to use or tow trawls, Danish seines or similar nets which have, in any part thereof, meshes measuring less than 130 mm.

However, trawls, Danish seines or similar nets may be used to catch squid or salmon provided they shall have, in one part thereof, meshes measuring less than 130 mm, but not less than:
- 60 mm for squid;
- 125 mm for salmon.

No device may be used which allows the meshes of any part of a net to be obstructed or the dimensions to be effectively reduced, except those devices listed in Attachment I hereof and under the conditions described therein.

Trawls, Danish seines or similar nets with mesh sizes less than those permitted in the present Article may not be kept on board, unless they are correctly arranged and stowed away so as to be unusable. To this effect, nets in particular must be detached from their trawl boards and their towing or trawling cables and lines; nets which are on or below deck must be secured firmly to a part of the superstructure.

Article 10

Catches made with the trawls, Danish seines or similar nets mentioned in the second paragraph of Article 9 must not comprise more than 10% of the species, other than squid or salmon, subject to a set-aside authorised under Article 5 of the present Decree.

This percentage is measured by weight of the total volume of fish on board after sorting or of the total volume of fish in the hold or at the time of landing. It may be calculated on the basis of one or more representative samples.

Additional catches exceeding the fixed percentage must not be kept on board, but put back into the sea immediately.

Article 11

It is prohibited to keep on board any fish, crustacean or mollusc the dimensions of which are less than those provided in Attachment 2 of the present Decree.

The produce of fishing not having the required size must be put back into the sea immediately.

The size of fish is measured in centimetres from the point of the snout to the end of the tail fin.

The size of scallops and Chlamys Islandica is measured from the hinge to the opposite edge. If scallops are shelled on board, the prohibition provided in the present Article applies only to scallop muscles or nuts, excluding gonads or coral, of less than 10 grammes. A tolerance of 5 % of the total number of muscles or nuts kept on board is allowed.

The size of lobsters is measured from one of the orbits to the dorsal posterior end of the thorax.

Article 12

The shelling of Chlamys Islandica and any physical or chemical processing of fish on board for the production of meal, oil or similar products is prohibited. These prohibitions do not concern the processing of fish offal.

Article 13

Nets must be marked with buoys placed at each end and in the middle and marked with the registration number of the vessel. These buoys must be equipped with a radar reflector from the 1st of May 1988.

CHAPTER III
Penal Provisions

Article 14

Without prejudice to any application of Articles 6, 7, 8 and 10 of the abovementioned Decree of 9 January 1852 as amended, the fine provided for class 5 infringements will be imposed upon anyone who shall have:

a) Carried out on board ship one of the operations prohibited in Article 12;

b) Refused or neglected to comply with the obligations regarding declarations of movements of vessels or those relative to the declaration of catches provided in Article 6;

c) Refused or neglected to comply with the obligation to mark nets as provided in Article 13;

d) Refused to take an observer on board when so requested in accordance with Article 4.

In the event of a repetition of the offence, the fine incurred will be that provided for the repetition of class 5 infringements.

Article 15

The Keeper of the Seals, Minister of Justice, the Minister for the Overseas Departments & Territories and the Secretary of State for the Sea are charged, insofar as each may be concerned, with the execution of the present Decree, which will be published in the Official Journal of the French Republic.

Done in Paris, the 19th of March 1987.

JAQUES CHIRAC

For the Prime Minister:

Keeper of the Seals, Minister of Justice,
ALBIN CHALANDON

Minister for Overseas Departments & Territories,
BERNARD PONS

Secretary of State for the Sea
AMBROISE GUELLEC

ATTACHMENT 1

Devices permitted to be fixed to trawls, Danish seines and similar nets

I. - Bottom chafer

a) A bottom chafer may be comprised of pieces of canvas, netting or any other material.

b) Several bottom chafers may be used at the same time and may overlap in parallel.

c) Bottom chafers may only be fixed to the external panel of the trawl and only on the lower half of any part of the trawl. Bottom chafers may only be secured at their front and lateral edges.

d) If reinforcing sleeves or strengthening collars are used, bottom chafers may only be fixed to the outside of the reinforcing sleeves or strengthening collars in the manner stipulated in the paragraph above.

II. - Cover (or top chafer)

a) The use of one of two types of covers designated as type A and type B is authorised.

b) A type A cover is comprised of any rectangular piece of netting having a mesh size at least equal to that of the codend of the trawl. The width must be equal to at least one and a half times that of the codend which is covered; its widths must be measured perpendicularly to the longitudinal axis of the codend. It may be fixed to the upper half of the exterior of the codend of the trawl by its front and side edges only. If a lifting bag is attached to the codend, the cover must be fixed in such a manner that does not extend for more than 4 meshes in front of the lifting bag. If a lifting bag is not attached, the cover must be fixed in such a manner that it does not cover more than the rearmost third of the codend. In both cases, the cover must terminate at least four meshes in front of the codline.

c) A type B cover is comprised of any rectangular piece of netting composed of yarn having the same diameter as that of which the codend is made and a mesh size equal to twice that of the codend. It may completely cover the upper half of the codend stricto sensu; it is fixed only along its four edges in such a manner that, at the securing points, the side of each mesh coincides with two sides of the meshes of the codend.

d) It is prohibited to use more than one cover at a time.

e) The simultaneous use of a cover and reinforcing sleeve is prohibited, except in the case of small mesh trawls conforming to the provisions of Article 9, paragraph 2 of the present text.

III - Reinforcing sleeve

a) A reinforcing sleeve is a strip or piece of netting of a cylindrical shape completely surrounding the codend of a trawl and is fixed to the codend at intervals. It has at least the same dimensions (length and breadth) as the part of the codend to which it is fixed.

b) It is prohibited to use more than one reinforcing sleeve except on nets conforming to the provisions of Article 9, paragraph 1, of the present text, on which two reinforcing sleeves may be used.

c) The mesh size permitted will be greater than or equal to double the mesh size of the codend and in no event may be less than 80 mm. If a second reinforcing sleeve is used, its mesh size will be greater than or equal to 120 mm.

d) It is prohibited to use reinforcing sleeves which extend forward of the codend.

e) If the reinforcing sleeve is composed of cylindrical net sections, these sections may not overlap for more than four meshes at the securing points.

f) Reinforcing sleeves fixed to the large-mesh trawls provided in Article 9, paragraph 1, of the present text may not extend more than two meters forward of the rear lifting strop.

g) By derogation of paragraph a, reinforcing sleeves smaller than the dimensions of the codend may be fixed to nets of small mesh size in conformity with the provisions of Article 9, paragraph 2, of the present text.

IV - Strengthening collar

a) A strengthening collar is a small cylindrical piece of netting with the same circumference as the codend or of any reinforcing sleeves, surrounding the codend or reinforcing sleeves at the securing point of the lifting strop.

b) It is prohibited to use a strengthening collar if the codend is not provided with a lifting strop.

c) It is prohibited to use a strengthening collar which exceeds one metre in length.

d) A strengthening collar may only be fixed in front of and behind each lifting strop.

e) The mesh size of a strengthening collar must be at least equal to that of the codend.

f) The circumference of a strengthening collar must be compared with that of the codend or reinforcing sleeve by stretching them with the same force.

V - Codline

a) A codline is a line enabling the rear part of the codend of the trawl and/or reinforcing sleeve to be closed either by an easily releasable knot or by a mechanical device.

b) The codline must be fixed at a distance not exceeding one metre from the last meshes of the codend.

These last meshes may be tucked inside the codend. If a "torquette" is used, the codline will pass through the last meshes of the codend.

c) Several codlines may be used per trawl. A codline may not close off the bottom chafer or the cover (or top chafer).

VI - Lifting strop

a) A lifting strop is a line or cable loosely surrounding the circumference of the codend of the trawl or any reinforcing sleeve used, and attached to the latter by loops or rings. Several lifting strops may be used.

b) The minimum length must be in conformity with the rules governing circular strops except that the lifting strop nearest to the codend may be shorter.

VII - Circular strops

a) Circular strops are lines in the form of a ring transversally encircling the codend or reinforcing sleeve at regular intervals and attached thereto.

b) The length of a circular strop is at least equal to 40% of the circumference of the codend, as measured by the product of the number of meshes in the circumference of the codend multiplied by the effective mesh size, except for the circular strop situated farthest to the rear called the "rear strop", if it is fixed at a distance equal to or less than two metres from the meshes of the codline, measured with the meshes stretched longitudinally.

c) The distance separating two successive circular strops must be equal to or greater than one metre.

d) A circular strop may surround reinforcing sleeves but may not surround a cover or bottom chafer.

VIII - Flapper

a) A flapper is a piece of netting with a mesh size at least equal to that of the codend of the trawl, fixed inside a trawl, in such a manner as to permit fish to pass from the front part of the trawl towards the rear, while limiting their possibilities of returning.

b) A flapper is fixed at its forward end and can be fixed at its sides to the inside of the codend or to the forward part of the codend.

c) The distance between the forward point of attachment of the flapper and the rear end of the codend is at least three times the length of the flapper.

IX - Filter net

a) A filter net is a piece of netting with a mesh size at least double that of the codend.

b) A filter net is fixed to the inside of the trawl in front of the codend and may not extend into the codend for more than one third of the length of the codend. It may be fixed to the trawl by all of its sides.

c) A maximum of two pieces of filter netting may be attached, provided that they are fixed to the upper half and the lower half of the trawl respectively and do not overlap it at any point.

X - Bellylines

a) A bellyline is any line other than a lastridge fixed at any point on the trawl.

b) It is prohibited to fix a bellyline inside the codend of a trawl.

XI - "Torquette"

a) A "torquette" is a piece of netting fixed inside a codend at its rear end. A "torquette" can be tucked inside the codend of the trawl.

b) The mesh size may not be less than that of the codend of the trawl.

c) A "torquette" may only be attached at its forward edge, may not extend forward of the last five meshes of the codend and may not extend back by more than one metre from the rear end of the last meshes of the codend.

XII - Median seam of a double codend

Meshes can be tied together to form a double codend by bringing together longitudinally the upper and lower halves of a codend.

ATTACHMENT 2
Minimum size of fish, crustaceans and molluscs

Cod (Gadus morhua)	34 cm
Haddock (Melanogrammus aeglefinus)	31 cm
Witch (Glyptocephalus cynoglossus)	28 cm
American plaice (Hippoglossoides plates-soides)	28 cm
Salmon (Salmo salar)	48 cm
Scallops (Placopecten Magellanicus)	9.5 cm
Chlamys Islandica	6.5 cm
Lobster	9 cm

ANNEX 12

LIST OF NORTH AMERICAN COMMISSION PAPERS

Paper No.	Title
NAC(93)1	Provisional Agenda
NAC(93)2	Draft Agenda
NAC(93)3	(not issued)
NAC(93)4	Salmon Fisheries on St Pierre et Miquelon
NAC(93)5	Draft Report of the Tenth Annual Meeting
NAC(93)6	Impact of Acid Rain on Atlantic Salmon
NAC(93)7	NASCO Tag Return Incentive Scheme - 1993 Prizes
NAC(93)8	Questions of Interest to the North American Commission of NASCO for Inclusion in the Request to ICES for Scientific Advice
NAC(93)9	NAC Scientific Working Group on Salmonid Introductions and Transfers; Report of Activities 1992/93
NAC(93)10	Figures Used by the Chairman of ACFM in his Presentation to the Commission
NAC(93)11	Status of Atlantic Salmon Stocks in 1992, Tabled by Canada
NAC(93)12	1993 Atlantic Salmon Management Plan, Tabled by Canada
NAC(93)13	Status of Atlantic Salmon Stocks in the United States of America in 1992
NAC(93)14	Agenda
NAC(93)15	Report of the Tenth Annual Meeting
CNL(93)13	Report of the ICES Advisory Committee on Fishery Management

NOTE This list contains all papers submitted to the Commission prior to and at the meeting. Some, but not all, of these papers are included in this report as annexes.

REPORT OF THE

TENTH ANNUAL MEETING

OF THE

NORTH-EAST ATLANTIC COMMISSION

7-11 JUNE 1993
EDINBURGH, UK

CHAIRMAN:	MR HENRIK SCHMIEGELOW (EEC)
VICE-CHAIRMAN:	MR PEKKA NISKANEN (FINLAND)
RAPPORTEUR:	MR GEORG RIEBER-MOHN (NORWAY)
SECRETARY:	DR MALCOLM WINDSOR

NEA(93)10

CONTENTS

		PAGE
REPORT OF THE TENTH ANNUAL MEETING OF THE NORTH-EAST ATLANTIC COMMISSION, 7-11 JUNE 1993, EDINBURGH, UK		185
ANNEX 1	LIST OF PARTICIPANTS	189
ANNEX 2	AGENDA, NEA(93)8	195
ANNEX 3	REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT, CNL(93)13, (SECTION 2)	197
ANNEX 4	SALMON FARMING IN THE TENO FJORD, NEA(93)6	207
ANNEX 5	REGULATORY MEASURE FOR FISHING OF SALMON IN THE FAROE ISLANDS FOR THE CALENDAR YEAR 1994, NEA(93)11	209
ANNEX 6	DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES, CNL(93)50	211
ANNEX 7	NASCO TAG RETURN INCENTIVE SCHEME - 1993 PRIZES, NEA(93)4	213
ANNEX 8	LIST OF NORTH-EAST ATLANTIC COMMISSION PAPERS	215

NEA(93)10

REPORT OF THE TENTH ANNUAL MEETING OF THE NORTH-EAST ATLANTIC COMMISSION OF THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION 7-11 JUNE 1993, BALMORAL HOTEL, EDINBURGH, SCOTLAND

1. OPENING OF THE MEETING

1.1 The Tenth Annual Meeting of the North-East Atlantic Commission was opened by the Chairman, Mr Henrik Schmiegelow (EEC), who welcomed delegates to Edinburgh.

1.2 A list of participants is given in Annex 1.

2. ADOPTION OF THE AGENDA

2.1 The Commission adopted its agenda, NEA(93)8, (Annex 2) following the inclusion of a new agenda item concerning the attendance of non-government observer organizations at its annual meetings.

3. NOMINATION OF A RAPPORTEUR

3.1 The Commission nominated Mr Georg Rieber-Mohn (Norway) as Rapporteur for the meeting.

4. NON-GOVERNMENT OBSERVERS AT COMMISSION MEETINGS

4.1 The Commission considered the question of attendance of non-government observer organizations at its meetings in the light of the recommendation of the Council to extend, from 1994, the rights of NGO's to include attendance at the meetings of the regional Commissions. The Commission endorsed the recommendation of the Council on this matter and agreed to permit attendance of NGO's as observers at its meetings, in accordance with Rule 28 of its Rules of Procedure, for a trial period of two years commencing in 1994.

5. REVIEW OF THE 1992 FISHERY

5.1 The Commission reviewed the 1992 offshore fishery in the Faroe Islands which had been described in detail in the ACFM report from ICES. There was no commercial fishery during 1992 because of a compensation agreement which applied to the years 1991, 1992 and 1993. Research fishing by one vessel took place under the direction of the Faroese Fisheries Laboratory and the catch amounted to 23 tonnes.

5.2 The representative of Denmark (in respect of the Faroe Islands and Greenland) referred to research which had been conducted in the last year in order to maintain the database on the sea phase of salmon and which included a tagging programme conducted in cooperation with Norway. He stated that negotiations will commence before the end of the year on a new compensation agreement. However, he stated that such private agreements should not influence the work of NASCO.

6. ACFM REPORT FROM ICES ON SALMON STOCKS IN THE COMMISSION AREA

6.1 The Chairman of the ACFM, Dr Fredric Serchuk, presented the scientific advice from ICES relevant to the North-East Atlantic Commission, CNL(93)13, (Annex 3) prepared in response to a request from the Commission at its Ninth Annual Meeting.

6.2 The representative of Denmark (in respect of the Faroe Islands and Greenland) referred to the difference in the scope of the scientific advice between the western North Atlantic and the North-East Atlantic. The representative of ICES stated that while the scientific advice was not as complete in the North-East Atlantic there is much valuable information available on which to base management decisions. In principle the system was no more complicated in the North-East Atlantic though reared fish and the larger number of countries' stocks involved made the assessments required in order to provide management advice more complex. While catches of salmon are only a coarse indicator of stock status because of the effects of management measures, the decline in mean weight and mean size of European fish at West Greenland gives rise to concern. There are other indicators of a decline in stock status.

7. ENVIRONMENTAL QUALITY OF SALMON RIVERS

7.1 The Chairman referred to Council papers CNL(93)31 and CNL(93)33 dealing with the Impacts of Introductions and Transfers and the Spread of Gyrodactylus. The representatives of Norway, Finland, Russia and Sweden referred to the occurrence of *Gyrodactylus salaris* in some salmon rivers in their respective countries and expressed serious concern about the impacts on wild salmon populations. The representative of Norway referred to the initiatives of the North American Commission in developing Protocols for the Introduction and Transfer of Salmonids and proposed that the North-East Atlantic Commission might establish a Working Group to look at the possibility of developing agreements in the North-East Atlantic area. The Commission decided in principle to convene a Working Group to do this which would meet before the next annual meeting and report back to the Commission at its Eleventh Annual Meeting. The Commission asked the Secretary to prepare initial papers for that meeting drawing on the experience of the North American Commission's Protocols.

7.2 The representative of Finland tabled a document, NEA(93)6, (Annex 4) concerning salmon farming in the Teno (Tana) fjord. He referred to the national and international significance of this river and to the growing concern about the increasing number of fish farm escapees in the river. Finland supports the view of the Lappish Community that the fjord should be free of aquaculture. Such action would be in accordance with the Precautionary Principle and the NASCO "Guidelines to Minimise the Threats to Wild Stocks from Salmon Aquaculture". The representative of Norway indicated that Norway shares Finland's concern about salmon aquaculture and referred to the establishment of a Bilateral Commission to deal with this issue as a part of renegotiation of the agreement concerning the Tana river.

7.3 Concern was also expressed by the representatives of Norway and Sweden about the impacts of acidification on salmon stocks. The representative of Sweden referred to

a publication entitled "How to Save Acidified Waters - a Synthesis of the Swedish Liming Programme", scheduled to be published in 1993/94.

8. REGULATORY MEASURES

8.1 The representative of Denmark (in respect of the Faroe Islands and Greenland) stated that there was nothing in the ACFM report that indicated the need for change to the present quota arrangements. The representative of Iceland referred to the need to reduce the quota in the light of the scientific data. The representative of the EEC stated that while the scientific data was not as conclusive as he would have liked the Community would wish to see a reduction in the quota. The representative of Norway referred to the introduction of new salmon legislation in Norway and to a new classification of salmon rivers. Despite the ban on drift netting half of the rivers in Norway are considered to be in a vulnerable condition and he referred to the need to adopt the Precautionary Principle and to introduce regulations for the Faroese fishery which might include shortening the fishing season or reducing the number of boats.

8.2 The Commission considered a proposal from the Chair for a regulatory measure. A number of delegations expressed the view that they would have wished to see a stronger regulatory measure but they could accept the measure in a spirit of compromise. The Commission adopted the regulatory measure, NEA(93)11, (Annex 5).

9. FISHING FOR SALMON IN INTERNATIONAL WATERS BY NON-CONTRACTING PARTIES

9.1 The Chairman referred to the deliberations within the Council on this issue. The Secretary reported that there had been further sightings of vessels operating in international waters in the Commission area during 1993. The Commission agreed that further actions to stop fishing for salmon in the Commission area should continue to be coordinated by the Council.

10. RECOMMENDATIONS TO THE COUNCIL ON SCIENTIFIC RESEARCH

10.1 At its Ninth Annual Meeting the Commission had appointed Mr Kjartan Hoydal (Denmark (in respect of the Faroe Islands and Greenland)) and Dr Lars Hansen (Norway) to represent the Commission on the Standing Scientific Committee.

10.2 The Commission reviewed document, SSC(93)5, and agreed to recommend it to the Council as part of the annual request to ICES for scientific advice. The request to ICES for Scientific Advice agreed by the Council, CNL(93)50, is contained in Annex 6.

11. REPORT ON NASCO TAG RETURN INCENTIVE SCHEME AND ANNOUNCEMENT OF AWARDS

11.1 The Chairman announced that the draw for the prizes in the Tag Return Incentive Scheme was made by the Auditor at NASCO Headquarters on 28 May 1993. The winner of the first prize was Ian Lorimer, Montrose, Scotland, UK. A list of all prize

winners was presented to the Commission, NEA(93)4, (Annex 7). The Commission offered its congratulations to all of the winners.

12. OTHER BUSINESS

12.1 There was no other business.

13. DATE AND PLACE OF NEXT MEETING

12.1 The Commission agreed to hold its next annual meeting during the Eleventh Annual Meeting of the Council, 6-10 June 1994, in Norway.

14. CONSIDERATION OF THE DRAFT REPORT OF THE MEETING

14.1 The Commission agreed the draft report of the meeting, NEA(93)3.

ANNEX 1

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION
NINTH ANNUAL MEETING OF THE NORTH-EAST ATLANTIC COMMISSION
7-11 JUNE 1993, EDINBURGH UK

LIST OF PARTICIPANTS

* Denotes Head of Delegation

MEMBERS OF THE COMMISSION

DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND)

*MR KJARTAN HOYDAL	Representative Faroese Home Government, Torshavn
MR EINAR LEMCHE	Representative Greenland Home Rule Government, Copenhagen Office
MR PAAVIARAAQ HEILMANN	The Organization of Hunters and Fishermen in Greenland, Nuuk
MR JENS MOELLER JENSEN	Greenland Fisheries Research Institute, Copenhagen
MRS AMALIE JESSEN	Department of Fisheries, Greenland Home Rule Government, Nuuk
MR JASPUR KRUSE	Felagid Laksaskip, Faroe Islands
MR SIVERTH D LARSEN	The Organization of Hunters and Fishermen in Greenland, Nuuk
MR SOFUS POULSEN	Faroese Commercial Attaché, Aberdeen
MR ANTHON SIEGSTAD	The Organization of Hunters and Fishermen in Greenland, Nuuk

EEC

*MR HENRIK SCHMIEGELOW	Representative Commission of the European Communities, Brussels
MR ERNESTO PENAS	Representative Commission of the European Communities, Brussels
MR JESPER KAAE	Royal Danish Embassy, London

MR ALEXANDER ZAFIRIOU	Council of Ministers, Brussels
MS MARIA ARAGON	Ministry of Agriculture, Fisheries and Food, Madrid, Spain
MR MICHAEL BREATHNACH	Central Fisheries Board, Dublin
MR JOHN BROWNE	Department of the Marine, Dublin
DR ANTHONY BURNE	Ministry of Agriculture, Fisheries and Food, London
MR DAVID DICKSON	Scottish Office Agriculture and Fisheries Department, Edinburgh
MR DAVID DUNKLEY	Scottish Office Agriculture and Fisheries Department, Montrose
DR PADDY GARGAN	Central Fisheries Board, Dublin
MRS PAM JARVIS	Ministry of Agriculture, Fisheries and Food, London
DR GUY MAWLE	National Rivers Authority, Bristol
MR ADRIAN MCDAID	Permanent Representation of Ireland to the EC, Brussels
MR JOHN O'CONNOR	Department of the Marine, Dublin
MR TED POTTER	Ministry of Agriculture, Fisheries and Food, Lowestoft
MR BOB WILLIAMSON	Scottish Office Agriculture and Fisheries Department, Edinburgh

FINLAND

*MR PEKKA NISKANEN	Representative Ministry of Agriculture and Forestry, Helsinki
MR EERO NIEMELA	Representative Finnish Game and Fisheries Research Institute, Helsinki

ICELAND

*MR HELGI AGUSTSSON	Representative Icelandic Ambassador to the United Kingdom, London
MR ARNI ISAKSSON	Representative Institute of Freshwater Fisheries, Reykjavik
MR ORRI VIGFUSSON	North Atlantic Salmon Fund, Reykjavik

NORWAY

MR BØRRE PETTERSEN	President of NASCO Ministry of the Environment, Oslo
*MR SVEIN MEHLI	Representative Directorate for Nature Management, Trondheim
MR MARIUS HAUGE	Representative Royal Ministry of Fisheries, Oslo
MR STEINAR HERMANSEN	Representative Ministry of the Environment, Oslo
DR LARS PETTER HANSEN	Norwegian Institute for Nature Research, Trondheim
MR GEORG RIEBER-MOHN	Ministry of the Environment, Oslo

RUSSIAN FEDERATION

*DR ALEXANDER SOROKIN	Representative PINRO, Murmansk
MR BORIS N KOTENEV	Representative VNIRO, Moscow
MR GUENRIKH BOROVKOV	Committee of Russian Federation on Fisheries, Moscow
MS ELENA SAMOILOVA	PINRO, Murmansk

SWEDEN

*DR INGEMAR OLSSON	Representative National Board of Fisheries, Göteborg
MR KARL-ERIK BERNTSSON	Representative National Board of Fisheries, Göteborg

OBSERVERS - PARTIES

CANADA

DR JOHN M ANDERSON	Atlantic Salmon Federation, St Andrews, New Brunswick
MR RICHARD HEGAN	Department of Fisheries and Oceans, Ottawa, Ontario
MR GLEN JEFFERSON	Department of Fisheries and Oceans, Halifax, Nova Scotia

MR JIM B JONES	Department of Fisheries and Oceans, Moncton, New Brunswick
MR KEN JONES	Department of Fisheries and Oceans, Ottawa, Ontario
MR DAVID MEERBURG	Vice-President of NASCO Department of Fisheries and Oceans, Ottawa, Ontario
MR REX PORTER	Department of Fisheries and Oceans, St Johns, Newfoundland

USA

DR VAUGHN ANTHONY	National Marine Fisheries Service, Woods Hole, Massachusetts
MR EDWARD T BAUM	Maine Atlantic Sea Run Salmon Commission, Bangor, Maine
MS JANE CLEAVES	Atlantic Salmon Federation, Brunswick, Maine
DR KEVIN FRIEDLAND	National Marine Fisheries Service, Woods Hole, Massachusetts
DR JAMIE GEIGER	US Fish and Wildlife Service, Hadley, Massachusetts
MR ROBERT A JONES	Connecticut River Salmon Association, S. Windsor, Connecticut
MR ARTHUR NEILL	National Marine Fisheries Service, Woods Hole, Massachusetts
MR RICHARD ROE	National Marine Fisheries Service, Gloucester, Massachusetts
DR DEAN SWANSON	National Marine Fisheries Service, Silver Springs, Maryland
MR STETSON TINKHAM	Department of State, Office of Fisheries Affairs, Washington DC

ICES

DR EMORY D ANDERSON	International Council for the Exploration of the Sea, Copenhagen
DR ROGER BAILEY	International Council for the Exploration of the Sea, Copenhagen

DR FREDRIC M SERCHUK	National Marine Fisheries Service, Woods Hole, Massachusetts

SECRETARIAT

DR MALCOLM WINDSOR	Secretary
DR PETER HUTCHINSON	Assistant Secretary

ANNEX 2

NEA(93)8
TENTH ANNUAL MEETING OF THE NORTH-EAST ATLANTIC COMMISSION
7-11 JUNE 1993, BALMORAL HOTEL, EDINBURGH, SCOTLAND, UK

AGENDA

1. Opening of the Meeting
2. Adoption of the Agenda
3. Nomination of a Rapporteur
4. Non-Government Observers at Commission Meetings
5. Review of the 1992 Fishery
6. ACFM Report from ICES on Salmon Stocks in the Commission Area
7. Environmental Quality of Salmon Rivers
8. Regulatory Measures
9. Fishing for Salmon in International Waters by Non-Contracting Parties
10. Recommendations to the Council on Scientific Research
11. Report on NASCO Tag Return Incentive Scheme and Announcement of Awards
12. Other Business
13. Date and Place of Next Meeting
14. Consideration of the Draft Report of the Meeting

ANNEX 3

COUNCIL

CNL(93)13

REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT

(SECTION 2)

2. INFORMATION OF INTEREST TO THE NORTH-EAST ATLANTIC COMMISSION

2.1 Description of the Fisheries at Faroes

2.1.1 Gear and effort

There was no commercial fishery in the Faroes during the 1991/1992 salmon season due to the buy-out of the Faroes quota by various interested parties for the years 1991-1993. Only one research vessel operated during the fishing season, under the direction of the Faroes Fisheries Laboratory. The gear in use did not change in 1992. A total of 52 sets was fished by this vessel during 6 trips in the 1991/1992 season.

2.1.2 Catches and discards

No commercial fishery took place in 1991/1992. Catches for research purposes in the 1991/1992 season were 31 t and the preliminary catch for the calendar year 1992 was 23 t. A total of 8,464 fish was caught of which 782 were less than the permitted 60 cm total length. The discard rate from the catch ranged from 2.5 to 15.7%, and the overall estimate was 8.8%.

Catch (t)

Year	Catch	Season	Catch
1987	576	1986/1987	539
1988	243	1987/1988	208
1989	364	1988/1989	309
1990	315	1989/1990	364
1991	95	1990/1991	202
1992[1]	23	1991/1992	31

[1]Research vessel

2.1.3 Catch per unit effort

The CPUE on the research vessel in the first part of the season was very high and, as in 1988/1989, it remained high during February and March and dropped off in April.

2.1.4 Composition of the catch

Recent observations have shown that escaped reared fish are numerous in catches in the Faroes area. As a part of the sampling programme of Atlantic salmon in the long-line research fishery at Faroes, fish were examined in order to estimate the occurrence of reared salmon in the fishery. Recent observations are presented in the text table below:

Season	Time	N	%
1989/1990	Feb 1990	73	44
1990/1991	Dec 1990	99	42
1991/1992[1]	Dec 1991	119	36
	Feb 1992	158	48
	Mar 1992	79	25
	Apr 1992	98	28

[1]Research vessel

The methodology used to discriminate between wild and reared fish tends to underestimate the proportion of reared fish, in particular those which escaped at the freshwater stage, or at an early marine stage.

Wild fish were significantly larger and of older sea age than the reared fish. However, when compared within sea age groups, reared 1SW fish were significantly larger than wild 1SW fish, whereas among the 2SW and 3SW groups, the wild fish were larger.

2.1.5 Origin of the catch

Coded wire tags (CWT) were recovered principally from Irish salmon originating from Shannon River hatchery releases. Individual tags were also recovered from 3 rivers in UK England and Wales and 2 rivers in Scotland. One French origin tag was recovered; this is the first French microtag recovery although Carlin tags have been recovered in the past. The number of external tags recovered from fish tagged in Norway and Sweden was lower than in previous years.

2.1.6 Exploitation rates in the Faroes fishery

Exploitation rates in 1991/1992, after the cessation of the commercial fishery, were below 5% for all stocks. This was considerably lower than the average for the preceding five year period. The exploitation on the Norwegian Drammen and Imsa hatchery 2SW fish decreased from an average of 21 and 23% to 2 and 1% respectively.

	Exploitation					
Season	86/87	87/88	88/89	89/90	90/91	91/92
Drammen	3	6	36	45	13	2
Imsa (w)	13	5	3	5	13	4
Imsa (h)	28	21	10	15	36	1
N. Esk	6	0	0	0	2	0
Lagan	0	9	13	21	18	3

2.2 Description of Homewater Fisheries

2.2.1 Gear and effort

There were no reported changes in the fishing methods and gear used in 1992 for any countries. Long-term changes in effort were examined for selected gears. The data available from France, Norway, UK (England and Wales), UK (N. Ireland) and UK (Scotland) all indicate a decrease in the numbers of gear units used. In Norway the decrease has been particularly marked with the closure of the drift net fishery in 1989. In Ireland, effort in commercial fisheries appears to have decreased while rod licences increased. It must be emphasized that these data cannot be used to estimate CPUE and may not be comparable between countries.

2.2.2 Origin of the catch

Table 2.2.2.1 indicates the origin of the catch in each country based on recoveries of tags over a number of years. It must be noted that the table may reflect the relative size of the national catches and does not imply the proportion of the stock from a given country which is taken in another country's catches.

The first text table in Section 2.2.3 shows the estimated contributions of ranched and farmed fish to national catches in 1992.

Ranching is carried out on a large scale by Iceland. Ranched fish comprised 76% of the total catch in 1991 and 70% in 1992. In addition 14 t in 1991 and 24 t in 1992 of the Swedish catch were made up of fish which had been released but were not expected to contribute to wild spawning populations.

Farmed fish make a significant contribution to the catches of Norway, Faroes and UK (Scotland). The proportion of farmed fish in Norwegian catches has remained relatively stable in the period 1989-1992. The proportion of farmed fish in freshwater catches is much lower than in catches at sea because farmed fish enter freshwater later than wild fish.

While farmed fish are present in most fisheries except Russia and France the exact contribution is not known. Levels of between 7 and 20% farmed fish have been reported from some catches in regional fisheries (coastal and estuarine) in Ireland. In most other countries, farmed fish are thought to form only a very minor (or negligible) part of the catch.

2.2.3 Exploitation rates

A comparison of exploitation rates for different stocks does not show any obvious similarities, except that hatchery stocks are often more heavily exploited than wild stocks. This is the case even when wild and reared fish originate from the same stock, as is the case for the River Bush and River Imsa stocks (see second text table in Section 2.2.3).

The levels of exploitation in 1992 seemed to be about average in most cases, except for the Russian River Ponoy where the exploitation was reduced. In 1991 and 1992

it was decided to reduce the exploitation rate in the River Ponoy in order to increase spawning stocks and make more fish available for the developing recreational fishery.

Estimated catch (in t round fresh weight) of wild, farmed and ranched salmon in homewater fisheries in 1992

Country	Catches of salmon			
	Wild	Farmed	Ranched	Total
Faroes	20	11	0	31
Finland	77	<1	0	78
France	20	0	0	20
Iceland	176	+	412	590
Ireland	<628	+	2	630
Norway	651	26 (FW)		
		17 (Sea)		850
Russia	161	3	0	161
Sweden	24	0	24	49
UK (Engl. & Wales)	195	1	0	195
UK (N. Ireland)	147	0	3	151
UK (Scotland)	502	1	0	525
		23		

An illegal fishery of considerable magnitude occurs in many of the Russian rivers. The illegal fishery was estimated to catch 15% of the spawning stock in River Varzuga, 25% in River Pechora and 26% in River Umba. There is no clear sign that the illegal fishery is changing in size from year to year.

Preliminary 1992 homewater fishery (H/W) exploitation rates in comparison to average exploitation rates

Location	(River, H/W)	1SW	2SW	All ages
		1992 (average)	1992 (average)	1992 (average)
Iceland	(Ellidar, W)	48(41)		
Ireland	(Burrishoole, H)	68(73)		
Norway	(Drammen, H)	- (56)	51(51)	
Norway	(Imsa, W)	57(58)	76(77)	
Norway	(Imsa, H)	67(66)	91(83)	
Russia	(Ponoy, W)			11(48)
Russia	(Kola, W)			77(81)
Russia	(Tuloma, W)			45(49)
Sweden	(Lagan, H)	73(81)	100(84)	
UK (Engl. & Wales)	(Itchen, net)			9(17)
UK (Engl. & Wales)	(Itchen, rod)			27(42)
UK (Engl. & Wales)	(Test, rod)			25(31)
UK (N. Ireland)	(Bush, W)	56(68)	32(43)	
UK (N. Ireland)	(Bush, H)	74(78)	75(69)	
UK (Scotland)	(N. Esk)	28(28)	27(30)	

W = wild; H = hatchery

2.2.4 Effects of recent management measures in Norway

The impact of the recent management measures on catches in Norwegian home waters in 1989-92 is shown below.

Catch (t)

	1986	1987	1988	1989	1990	1991	1992
Drift	795	552	527	0	0	0	0
Other	497	461	314	488	514	470	427
Freshwater	306	372	235	417	416	407	423
Proportion in freshwater	19	27	22	46	45	46	50

It is likely that the ban on drift netting in 1989 has resulted in a larger number of salmon being available to other marine homewater fisheries. The additional regulations in these fisheries has probably resulted in a substantial increase in freshwater

escapement suggested by increased catches in freshwater despite the fact that freshwater fisheries also have been regulated by extending the annual closed time and that fishing for salmon has been totally banned in several rivers.

The frequency of net-marked salmon entering a river will also give information about changes in netting effort on the migration route. In all except one river the proportion of net-marked salmon recorded in 1990-1992 was much lower than unweighted means during the period 1978-1988. The reduced proportion of net-marked fish may be accounted for by the management measures introduced in the Norwegian homewater fishery in 1989.

The salmon fishery on the Norwegian coast intercepts stocks from Sweden, Finland and Russia on their way back to their home rivers. Exploitation in Norway on 1SW fish tagged as smolts in the River Lagan, Sweden in 1989, 1990, 1991 and 1992 was lower (average 1%) than in 1985-1988 (average 7%). It is concluded that the regulations introduced in the Norwegian homewater fishery in 1989 benefited Swedish west coast stocks. Catch per angler-season and catch per angler-day in the Tana River, Finland has shown a significant increase in the period 1989-1992 compared to 1985-1988, thus suggesting a direct benefit to Finnish stocks. The escapement into 3 Russian rivers (Kola, Ponoy and Zap.Litca) showed a significant increase during the period 1989-1992 compared to 1985-1988.

In summary, the Norwegian management measures have resulted in: **i)** a significant decrease in the homewater exploitation rates in some Norwegian index river stocks; **ii)** a significant increase in freshwater catches in Norway; **iii)** a significant increase in CPUE in Finland; **iv)** a significant decrease in interception of Swedish tagged fish; **v)** a significant increase in escapement into 3 Russian rivers.

2.3 By-catch and Mortality of Salmon in Non-directed Fisheries

The landing of salmon caught in fisheries targeting other species is illegal in most countries in the North-East Atlantic Commission area except France, where it is authorized, and Sweden, where landing is allowed during the regular fishing season. In some of the countries where the by-catch cannot be landed legally, and in France where they are not consistently requested, these catches are included in the estimates of unreported catches.

By-catch in shore-based gillnets, purse seines and pelagic trawls is considered to be negligible and this is supported by information from research vessel cruises. In Iceland, the authorities are currently negotiating the closure in June and July of the fishery for male (small) lumpsuckers in order to protect salmon. In Norway, fishing experiments with mackerel gillnets showed a relatively high catch efficiency also for small salmon.

ACFM noted a report from NASCO in which information was given on the incidental catch of salmon in a pelagic trawl fishery for mackerel and horse mackerel during June to August 1991 in international waters close to the Norwegian EEZ. It was not possible with the information available to determine whether such catches are regular occurrences.

2.4 Indicators of Trends in Abundance of Salmon in the North-East Atlantic

Several biological and physical indicators can potentially be used to predict the abundance of salmon stocks in subsequent years. Most common are population estimates conducted at various points in the salmon's lifecycle, both in fresh and salt water.

Freshwater assessments

Biological indices used in freshwater include catches, run or escapement counts (spawning targets), estimates of egg, fry or parr abundance as well as smolt counts. These methods tend to be less costly than marine assessments and have thus been used to some extent in all countries bordering the North Atlantic. These methods give good estimates of the utilization of the rearing capacity in individual rivers and smolt counts can in some cases be a good indicator of grilse and salmon abundance in subsequent years.

Marine assessments

Methods used to predict salmon abundance through assessments during the marine phase include test fishing at various stages, acoustic surveys and prediction of non-maturing 1SW salmon from returning 1SW salmon in home waters. In some cases, oceanographic and meteorological factors, as well as the abundance of prey and possibly predatory species could be used to improve predictive ability. It has been noted that good salmon years in certain parts of Iceland seem to coincide with high catches in the capelin fishery.

Acoustic assessments

Acoustic methods have been used to estimate the abundance of pelagic fish for decades. Some difficulties have been encountered in estimating salmon abundance with these methods as the salmon feed close to the surface and are widely dispersed.

Forecasts of salmon abundance from 1SW returns

The abundance of 1SW fish can potentially be used as a rough predictor of the abundance of 2SW salmon in the following year. The method was first used in the Pacific to predict sockeye salmon abundance from the returns of jacks (1SW males) the previous year. Run reconstruction models have in the past indicated that age of maturity is one of the more stable biological parameters in salmon.

2.5 Effects of the NASCO Tag Return Incentive Scheme

No quantitative analyses of the effects of the scheme have been carried out. The main reasons are the small numbers of external tags used and insufficient awareness of fishermen about the NASCO lottery in most participating countries.

2.6 Effects of the Cessation of Fishing Activity at Faroes

The predicted increase in the numbers of fish returning to homewaters in 1992 as a direct result of cessation of fishing activities at Faroes would be approximately:

Wild 1SW	3,400
Wild 2SW	34,400
Farmed	22,000

These fish will probably have contributed to homewater fisheries in most salmon producing countries in the north-east Atlantic. However, it is unlikely that it will be possible to demonstrate a significant change in catches after a single year. The majority (perhaps 60-80%) of the wild fish caught at Faroes are thought to originate from Scandinavian, Finnish and Russian stocks and thus the greatest impact should be seen in the fisheries of these countries. These increased catches would, therefore, have represented the following proportions of the recorded homewater catches:

Wild 1SW	~ 1%
Wild 2SW	6 - 13%
Farmed	10- 22%

Such small increases over the entire north-east Atlantic area, but affecting mainly Scandinavian, Finnish and Russian stocks have been within the annual variation of catches in these countries and will not represent a statistically significant increase.

The cessation of fishing would have the expected effect of reducing exploitation at Faroes to about 10% of levels in the previous three seasons. For stocks with sufficient tag returns, the exploitation observed in the 1991/92 season was significantly lower than in previous seasons.

Table 2.2.2.1 Origin of catches of salmon in homewater fisheries based on tag recoveries.

++ = Principal component of catch
+ = Consistant recoveries
- = Rare tag recovery

Origin of stock	Catch by Country									
	Rus	Fin	Nor	Swe	Fr	UK E & W	UK Scot	UK N.Ire	Ire	Ice
Russia	++	-	+							
Finland	-	++	+							
Norway		+	++	+		-	-		-	
Sweden			+	++						
France					++	-	-	-	-	
UK (E & W)			-	-		++	+	+	+	
UK (Scot)						+	++	+	+	
UK (N.Ire)						-	+	++	+	
Ireland			-	-		-	+	+	++	
Iceland			-				-			++

NORTH-EAST ATLANTIC COMMISSION

NEA(93)6

SALMON FARMING IN THE TENO FJORD

Finland is very concerned about the continuing farming of salmon in sea cages in the Teno Fjord. In 1992 the catch of salmon in the Teno river was 170 tonnes which is about 20% of the total Norwegian homewater catch in 1992. If the catch of salmon in the Teno fjord is included the total catch attributable to the Teno was 250 tonnes. This is a remarkable level of production for one river. It should be stressed that the production is due entirely to wild fish because hatchery releases into the Teno are prohibited. In recent years we have observed increasing numbers of fish farm escapees in the Teno river and this gives us real concern. Furthermore, the disease furunculosis is spreading to more northerly rivers in Norway and we are very concerned that it could also reach the Teno. In conclusion, Finland fully supports the view of the Lappish people that salmon farming should be prohibited in the fjords of important salmon rivers. Such prohibitions are in line with the NASCO "Guidelines to minimise the threats to wild salmon stocks from salmon aquaculture" which give priority to rivers which are believed to be generally pristine in nature. There can be little doubt that the Teno river is one such river of considerable significance nationally and internationally. Finland therefore seeks the cooperation of Norway in eliminating cage rearing of salmon in the Teno fjord so as to safeguard the Teno salmon. Such action would, we believe, be in accordance with the Precautionary Principle.

NORTH-EAST ATLANTIC COMMISSION

NEA(93)11

REGULATORY MEASURE FOR FISHING OF SALMON IN THE FAROE ISLANDS FOR THE CALENDAR YEAR 1994

The North-East Atlantic Commission of the North Atlantic Salmon Conservation Organization

having regard to Article 8, subparagraph (b), recognising the need for regulatory measures in the Faroese fishery for the year 1994 decides that:

The Faroese catch shall be controlled in accordance with an effort limitation programme, set out in Appendix 1, for a period of one year.

The total nominal catch for the duration of the period shall not exceed 550 tonnes.

Appendix 1

The following regulatory measures for the fishing of salmon in the fisheries zone of the Faroe Islands for the year 1994 shall apply:

(1) Areas with salmon below the length of 60cm will be closed for salmon fishery at short notice, following the general rules for closing areas with undersized fish already in force in the Faroese fisheries zone;
(2) The number of boats licensed for salmon shall not exceed 13;
(3) The salmon fishing season will be limited to 150 days between 1 January and 1 April and 1 November and 31 December;
(4) Subject to the maximum annual catch the total allowable number of fishing days for the salmon fishery in the Faroe Islands zone shall be set at 1200.

ANNEX 6

COUNCIL

CNL(93)50

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

CNL(93)50

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

1. With respect to Atlantic salmon in each Commission area, where relevant:

   a) describe the events of the 1993 fisheries with respect to catches (including unreported catches), gear, effort, composition and origin of the catch and rates of exploitation;
   b) describe the status of the stocks occurring in the Commission area, and where possible evaluate escapement against targets;
   c) specify data deficiencies and research needs.

2. Evaluate the following management measures on the stocks and fisheries occurring in the respective Commission areas:

   a) quota management and closures implemented after 1991 in the Canadian commercial salmon fisheries;
   b) the suspension of commercial fishing activity at Faroes.

3. With respect to the fishery in the West Greenland Commission area:

   a) continue the development of the model used in providing advice on catch quotas in relation to stock abundance;
   b) estimate the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery;
   c) provide catch options with an assessment of risks relative to the management objective of achieving various levels of target spawning escapement;
   d) describe which stocks make the greatest numerical contributions of salmon to the fishery;
   e) evaluate the relationship between spawning escapement and subsequent pre-fishery abundance.

4. Evaluate the abundance of fish farm escapees and sea-ranched fish in fisheries and rivers and the genetic, disease and parasite, ecological and environmental impacts of these fish on the wild stocks and any impacts from current hatchery practices.

5. Evaluate grilsification mechanisms and assess the impact that grilsification may have on stock abundance and future spawning requirements.

6. Evaluate evidence for recruitment overfishing occurring on Atlantic salmon populations.

7. Evaluate the prospects of developing predictive models of annual migration and distribution of Atlantic salmon stock complexes.

8. Evaluate the results of the research programme at the Faroes.

9. With respect to Atlantic salmon in the NASCO area, provide a compilation of microtag, finclip and external tag releases by ICES Member Countries in 1993.

NORTH-EAST ATLANTIC COMMISSION

PAPER NEA(93)4

NASCO TAG RETURN INCENTIVE SCHEME

1993 PRIZES

The draw for the 10 winners in the North-East Atlantic Commission was made by the Auditor at NASCO Headquarters on 28 May 1993. At the Tenth Annual Meeting of the Commission in Edinburgh, the Chairman of the Commission, Mr Henrik Schmiegelow, announced the winners:

First prize - $1500 - Ian Lorimer, Nab Cottage, Kinnaber, Montrose, Angus DD10, UK

Second prize - $1000 - Fiskirannosoknasstovan, Box 3051, Noatun, FR Torshavn, Faroe Islands

Third prize - $500 - Nigel Spoor, 17 Abbots Way, Bangor on Dee, nr Wrexham, Clwyd LL13 0AA, UK

Fourth prizes - $100 - Terry Pym, 41 Rose Way, Exmouth, Devon EX8 5EY, UK

- T Flood, 3 Rosslyn Road, Vicars Cross, Chester, Cheshire, UK

- Brian R Harvey, 266 Grindley Lane, Blyth Bridge, Stoke-on-Trent, ST11 9LW, UK

- Kenneth Massie, Timber Cottage, Rossie Braes, by Montrose, UK

- Jarle Mikkelsen, Kletten 5, 5382 Skogsvåg, Norway

- Gert Åkesson, Gamla vägen 4, S-302 65 Halmstad, Sweden

- K J Ward, 280 Handley Road, Chesterfield S43 2ET, UK

The Commission offers its congratulations to the winners.

ANNEX 8

LIST OF NORTH-EAST ATLANTIC COMMISSION PAPERS

PAPER NO.	TITLE
NEA(93)1	Provisional Agenda
NEA(93)2	Draft Agenda
NEA(93)3	Draft Report of the Tenth Annual Meeting
NEA(93)4	NASCO Tag Return Incentive Scheme - 1993 Prizes
NEA(93)5	Questions of Interest to the North-East Atlantic Commission of NASCO for Inclusion in the Request to ICES for Scientific Advice
NEA(93)6	Salmon Farming in the Teno Fjord
NEA(93)7	Figures used by the Chairman of ACFM in his Presentation to the Commission
NEA(93)8	Agenda
NEA(93)9	Proposal by the Chair for a Regulatory Measure for Fishing of Salmon in the Faroe Islands for the Calendar Year 1994
NEA(93)10	Report of the Tenth Annual Meeting
NEA(93)11	Regulatory Measure for Fishing of Salmon in the Faroe Islands for the Calendar Year 1994
CNL(93)13	Report of the ICES Advisory Committee on Fishery Management

NOTE This list contains all papers submitted to the Commission prior to and at the meeting. Some, but not all, of these papers are included in this report as annexes.

REPORT OF THE

TENTH ANNUAL MEETING

OF THE

WEST GREENLAND COMMISSION

7-11 JUNE 1993
EDINBURGH, UK

CHAIRMAN:	MR DAVID EGAN (USA)
VICE-CHAIRMAN:	MR HENRIK SCHMIEGELOW (EEC)
RAPPORTEUR:	MR DAVID DUNKLEY (EEC)
SECRETARY:	DR MALCOLM WINDSOR

WGC(93)10

CONTENTS

		PAGE
REPORT OF THE TENTH ANNUAL MEETING OF THE WEST GREENLAND COMMISSION, 7-11 JUNE 1993, EDINBURGH, UK		221
ANNEX 1	LIST OF PARTICIPANTS	227
ANNEX 2	AGENDA, WGC(93)8	231
ANNEX 3	REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT, CNL(93)13, (SECTION 3)	233
ANNEX 4	PROPOSAL FROM THE CHAIR FOR EMERGENCY REGULATORY MEASURES IN THE WEST GREENLAND COMMISSION AREA, WGC(93)9	261
ANNEX 5	DECLARATION OF VOTE ON EMERGENCY REGULATORY MEASURE	265
ANNEX 6	DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES, CNL(93)50	267
ANNEX 7	NASCO TAG RETURN INCENTIVE SCHEME - 1993 PRIZES, WGC(93)4	269
ANNEX 8	LIST OF WEST GREENLAND COMMISSION PAPERS	271

WGC(93)10

REPORT OF THE TENTH ANNUAL MEETING OF THE WEST GREENLAND COMMISSION OF THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION 7-11 JUNE 1993, BALMORAL HOTEL, EDINBURGH, SCOTLAND

1. OPENING OF THE MEETING

1.1 The Tenth Annual Meeting of the West Greenland Commission was opened by the Chairman, Mr David Egan (USA), who welcomed delegates to Edinburgh.

1.2 A list of participants is given in Annex 1.

2. ADOPTION OF THE AGENDA

2.1 The Commission adopted its agenda, WGC(93)8, (Annex 2) following the inclusion of a new agenda item concerning the attendance of non-government observer organizations at its annual meetings.

3. NOMINATION OF A RAPPORTEUR

3.1 The Commission nominated Mr David Dunkley (EEC) as Rapporteur for the meeting.

4. NON-GOVERNMENT OBSERVERS AT COMMISSION MEETINGS

4.1 The Commission considered the question of attendance of non-government observer organizations at its meetings following the recommendation of the Council to extend, from 1994, the rights of NGO's to include attendance at the meetings of the regional Commissions. The representative of Denmark (in respect of the Faroe Islands and Greenland) requested that NGO's who attend future meetings and who published articles arising from those meetings should send copies of these articles to the Secretary. The Commission endorsed the recommendation of the Council on this matter and agreed to permit attendance of NGO's at its meetings in accordance with Rule 27 of its Rules of Procedure, for a trial period of two years commencing in 1994.

5. REVIEW OF THE 1992 FISHERY AND ACFM REPORT FROM ICES ON SALMON STOCKS IN THE COMMISSION AREA

5.1 The Chairman of the ACFM, Dr Fredric Serchuk, presented the Scientific Advice from ICES relevant to the West Greenland Commission, CNL(93)13, (Annex 3) prepared in response to a request from the Commission at its Ninth Annual Meeting.

5.2 The fishery at West Greenland in 1992 opened on 1 August and ended in November although the official closing date was 31 December. The total nominal catch was 237 tonnes which is 235 tonnes less than in 1991. No TAC was set in 1992 but if the landings in the first fourteen days had been high compared to previous years a TAC would have been implemented. Approximately 80% of the catch was taken by boats smaller than 30 feet. The two methods of classifying the origin of the catch at West

Greenland yielded estimates of 54% and 45% North American and 46% and 55% European origin.

5.3 The representative of Denmark (in respect of the Faroe Islands and Greenland) thanked the Chairman of the ACFM for his efforts to present the ACFM report in understandable graphs and clear language. However, he observed that there was very little time available to study the report of ACFM and the ACFM Chairman's summary before the Commission Meeting. The representative of ICES responded that the report of ACFM was produced as quickly as possible.

5.4 The representative of Denmark (in respect of the Faroe Islands and Greenland) asked for clarification of the method used to predict Pre-Fishery Abundance (PFA) using time-series analysis. The representative of ICES stated that mean values of predicted PFA had been used as neither maximum nor minimum values were ever truly applicable. The use of the time series analysis approach made use of data within the time series and revealed the underlying trend.

5.5 The representative of Denmark (in respect of the Faroe Islands and Greenland) asked if ICES had been able to demonstrate a correlation between high spawning escapement levels and high pre-fishery abundance in later years. The representative of ICES responded that while stock-recruitment relationships undoubtedly existed, they were not described in the ICES reports. The nature of the relationship is not known and is subject to numerous factors affecting mortality in both freshwater and the sea. The representative of Denmark (in respect of the Faroe Islands and Greenland) observed that the target spawners number of 196,000 fish for North America had never been realised and might be unrealistically high. The representative of ICES stated that the target was an aggregation of separate targets for rivers in Canada and the USA. In some cases the targets could be unrealistically low and it was not possible, with an overall target, to ensure that the needs of every river could be met.

5.6 The representative of Canada noted that the report from ICES indicated that salmon stocks were in a difficult state and it was clear that the time for making difficult decisions had arrived. Canada was conscious of the impact such decisions could have on northern communities, but the need for action was urgent.

5.7 The representative of the USA asked a series of questions with regard to the tables and figures which were satisfactorily answered by the Chairman of the ACFM. The representative of the USA asked whether the models used by ICES were reasonable and appropriate. The representative of ICES stated that the models relied on assumptions but that these were based on realistic dictates. There was always room for improvement but the evidence from other indicators of abundance suggested that the results of the modelling exercises were consistent with what was really happening.

5.8 The representative of the USA stated that with regard to the target levels for spawners, stocks had declined since 1975 and rather than the targets being too high, stocks had never reached the required level.

5.9 The representative of the EEC pointed out that the calculations to produce catch advice for the fishery at West Greenland were based on North American stocks. However, there was concern in Europe about the impact of the fishery on European

stocks. In recent years, the proportion of the catch taken in the southern fishery areas of West Greenland had increased and it was noted that these areas produced high proportions of European salmon in the catches. The decline in estimated numbers of European salmon at West Greenland had been even steeper than that for North American stocks.

5.10 The representative of ICES confirmed the marked decline in abundance of European stocks but pointed out that advice on catch levels for Europe was not possible in the absence of target spawner levels. Tagging programmes designed to identify the size of stock components present at West Greenland were not used to the same extent as in North America and, therefore, it is difficult to determine which components are present in Greenland and their magnitudes. ICES recommends that appropriate target spawning biomass levels should be set for Europe and that methods be developed to assess the contributions made by different stock components to different fisheries.

5.11 The Chairman thanked Dr Serchuk, who retires as Chairman of ACFM, for the work carried out during the last three years.

6. REGULATORY MEASURES

6.1 The representative of Denmark (in respect of the Faroe Islands and Greenland) reported that a private initiative to agree a reduction in the Greenland quota, with associated compensation mechanisms, had been started and that NASCO had expressed a desire to be informed of any such actions. A number of groups was involved including US and Canadian Governments and US and Icelandic private individuals, and these parties had met with representatives of the Greenlandic fishermen's organisations. Discussions were underway at present and perhaps no decisions should be taken at NASCO which might affect the private initiative.

6.2 The representative of the USA indicated that the private initiative had been underway for some time but that this should have no impact on negotiations within NASCO. This statement was echoed by the representatives of Canada and the EEC and accepted by the representative of Denmark (in respect of the Faroe Islands and Greenland).

6.3 The representative of Denmark (in respect of the Faroe Islands and Greenland) noted that, in 1992, he had presented to the Commission a proposal that quotas should be able to go up as well as down depending upon the status of stocks. In this context, a substantial reduction in quota could be discussed if this necessity was accompanied by reference to an appropriate model. The scientific advice from ICES was, for the first time, clear and impressive and there was agreement that there was a general downward trend in salmon abundance since 1975. Thus, Denmark (in respect of the Faroe Islands and Greenland) was prepared to accept the now developed estimate of PFA of non-maturing 1SW salmon at West Greenland as a parameter to be used in setting a quota in the short term, perhaps the next two years. It was clear that in discussing the setting of a TAC, three elements must be considered: PFA levels; target spawning biomass levels; and the allocation of the fish available for capture.

6.4 The representative of the USA welcomed these remarks and said that a number of people had long felt that these downward trends in abundance were real but that they had now been satisfactorily demonstrated by ICES. A number of severe measures had

been taken in other countries, notably Canada. The reluctance of Greenland to move too quickly, with the consequent effects on communities, was understandable but the data were now available to allow agreement to be reached.

6.5 The representative of the EEC stated that there had recently been considerable concern in the EEC over the exploitation of European salmon in Greenland. He welcomed the positive statements from USA and Denmark (in respect of the Faroe Islands and Greenland). The representative of Canada also welcomed the statement from Denmark (in respect of the Faroe Islands and Greenland) and was pleased to hear the principle expressed. He hoped that specific proposals would be put forward.

6.6 The representative of the USA referred to analyses presented by ICES and drew attention to the robustness of the regression model incorporating environmental data. He suggested a "risk neutral" approach should be adopted. With regard to allocation of the fish available for capture, it might be reasonable to start from the historical perspective, where about 40% of the fish of North American origin which were caught were taken in Greenland. However, the effects of harvesting specific stocks would have to be considered.

6.7 The representative of Denmark (in respect of the Faroe Islands and Greenland) reiterated the need for agreement that quotas should be able to go up as well as down. He stated that he would be prepared to accept the risk neutral PFA figure of 258,000. There was still some concern about the target level for the number of spawners, however, and it was felt that it would be unreasonable to go from the latest estimate of spawning stock of 70,000 fish to the target level, 196,000 fish, in one step. Information from ICES showed that target spawning biomass had been achieved in some rivers, but not all, and that if the very poorest rivers were to be brought up to target levels, virtually no fishing would be possible in Greenland. It was felt that this would be unreasonable.

6.8 The representative of the USA stated that targets had not been achieved for a number of reasons, not merely because of the Greenland fishery. However, ICES had advised on the target spawning biomass to be achieved and there was a need to adopt a conservative approach to ensure the survival of stocks. It was necessary to protect the weakest stock, which is also the one most affected by mixed stock fisheries. These stocks would also have to be protected by measures in homewaters such as fishery regulations and/or enhancement programmes. Therefore, the total burden need not fall on Greenland. He proposed that, as a starting point, the available fish should be allocated on the basis of existing exploitation rates and proportional harvest estimates.

6.9 The Commission considered a proposal from the Chair for emergency regulatory measures for the West Greenland fishery, WGC(93)9, (Annex 4). The Commission agreed that, in order to permit further consultations, the vote on the proposed measure would be deferred and would be conducted, in accordance with Rule 9 of the Commission's Rules of Procedure, by means of textual communication. The Commission agreed to a voting procedure outlined by the Secretary. On this occasion, the proposed measure would be transmitted by the Secretary to the Parties by fax and the Parties would be asked to cast their vote by 1700 hours (GMT) on Thursday 1 July 1993. Each vote would be acknowledged by the Secretary by fax and the result

of the vote would be transmitted immediately to all members of the Council. The representative of the US requested the members of the Commission to advise the Secretary by telephone when they had cast their vote.

6.10 The Chairman expressed his gratitude to his predecessor as Chairman, Dr Wilfred Carter (Canada), for his contribution to the work of the Commission.

Note:
The textual vote was held according to the procedure detailed in paragraph 6.9 above and the Secretary declared the vote (Annex 5) on 30 June. The vote showed that the Commission unanimously adoped the regulatory measure.

7. RECOMMENDATIONS TO THE COUNCIL ON SCIENTIFIC RESEARCH

7.1 At its Ninth Annual Meeting the Commission had appointed Mr Ted Potter (EEC) and Mr Jens Moller Jensen (Denmark in respect of the Faroe Islands and Greenland) to represent the Commission on the Standing Scientific Committee.

7.2 The Commission reviewed document SSC(93)5, and agreed to recommend it to the Council as part of the annual request to ICES for scientific advice. The request to ICES for Scientific Advice agreed by the Council, CNL(93)50, is contained in Annex 6.

8. REPORT ON NASCO TAG RETURN INCENTIVE SCHEME AND ANNOUNCEMENT OF AWARDS

8.1 The Chairman announced that the draw for the prizes in the Tag Return Incentive Scheme was made by the Auditor at NASCO Headquarters on 28 May 1993. The winner of the first prize was Svend Peter Sorensen, Arsuk, Greenland. A list of all prize winners was presented to the Commission, WGC(93)4, (Annex 7). The Commission offered its congratulations to all of the winners.

9. OTHER BUSINESS

9.1 There was no other business.

10. DATE AND PLACE OF NEXT MEETING

10.1 The Commission agreed to hold its next annual meeting during the Eleventh Annual Meeting of the Council, 6-10 June 1994, in Norway.

10.2 The Representative of Denmark (in respect of the Faroe Islands and Greenland) asked whether, in the Commission's view, it would be possible to delay the annual meeting by one or two weeks in the light of Article 13, paragraph 5 of the Convention. The Commission felt that it would be possible and asked the Secretary, in consultation with the President and Vice-President, to look at the possibilities and any other implications of this change.

11. CONSIDERATION OF THE DRAFT REPORT OF THE MEETING

11.1 The Commission agreed the draft report of the meeting, WGC(93)3.

ANNEX 1

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION
TENTH ANNUAL MEETING OF THE WEST GREENLAND COMMISSION
7-11 JUNE 1993, EDINBURGH, UK

LIST OF PARTICIPANTS

* Denotes Head of Delegation

MEMBERS OF THE COMMISSION

CANADA

*MR JEAN E HACHE	Representative Department of Fisheries and Oceans, Ottawa, Ontario
DR WILF CARTER	Representative Atlantic Salmon Federation, St Andrews, New Brunswick
MR JEAN-PAUL DUGUAY	Representative Gaspé, Quebec
DR JOHN M ANDERSON	Atlantic Salmon Federation, St Andrews, New Brunswick
MR RICHARD HEGAN	Department of Fisheries and Oceans, Ottawa, Ontario
MR GLEN JEFFERSON	Department of Fisheries and Oceans, Halifax, Nova Scotia
MR JIM B JONES	Department of Fisheries and Oceans, Moncton, New Brunswick
MR KEN JONES	Department of Fisheries and Oceans, Ottawa, Ontario
MR DAVID MEERBURG	Vice-President of NASCO Department of Fisheries and Oceans, Ottawa, Ontario
MR REX PORTER	Department of Fisheries and Oceans, St Johns, Newfoundland

DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND)

*MR KJARTAN HOYDAL	Representative Faroese Home Government, Torshavn
MR EINAR LEMCHE	Representative Greenland Home Rule Government, Copenhagen Office

MR PAVIAARAAQ HEILMANN	The Organization of Hunters and Fishermen in Greenland, Nuuk
MR JENS MOELLER JENSEN	Greenland Fisheries Research Institute, Copenhagen
MRS AMALIE JESSEN	Department of Fisheries, Greenland Home Rule Government, Nuuk
MR JASPUR KRUSE	Felagid Laksaskip, Faroe Islands
MR SOFUS POULSEN	Faroese Commercial Attaché, Aberdeen

EEC

*MR HENRIK SCHMIEGELOW	Representative Commission of the European Communities, Brussels
MR ERNESTO PENAS	Representative Commission of the European Communities, Brussels
MR JESPER KAAE	Royal Danish Embassy, London
MR ALEXANDER ZAFIRIOU	Council of Ministers, Brussels
MS MARIA ARAGON	Ministry of Agriculture, Fisheries and Food, Madrid, Spain
MR MICHAEL BREATHNACH	Central Fisheries Board, Dublin
MR JOHN BROWNE	Department of the Marine, Dublin
MR DAVID DUNKLEY	Scottish Office Agriculture and Fisheries Department, Montrose
DR PADDY GARGAN	Central Fisheries Board, Dublin
MRS PAM JARVIS	Ministry of Agriculture, Fisheries and Food, London
DR GUY MAWLE	National Rivers Authority, Bristol
MR ADRIAN MCDAID	Permanent Representation of Ireland to the EC, Brussels
MR JOHN O'CONNOR	Department of the Marine, Dublin
MR TED POTTER	Ministry of Agriculture, Fisheries and Food, Lowestoft
MR BOB WILLIAMSON	Scottish Office Agriculture and Fisheries Department, Edinburgh

USA

*MR ALLEN PETERSON	Representative National Marine Fisheries Service, Woods Hole, Massachusetts
MR DAVID EGAN	Representative Connecticut River Atlantic Salmon Commission, Guilford, Connecticut
MR CLINTON TOWNSEND	Representative Maine Council of the Atlantic Salmon Federation, Canaan, Maine
DR VAUGHN ANTHONY	National Marine Fisheries Service, Woods Hole, Massachusetts
MR EDWARD T BAUM	Maine Atlantic Sea Run Salmon Commission, Bangor, Maine
MS JANE CLEAVES	Atlantic Salmon Federation, Brunswick, Maine
DR KEVIN FRIEDLAND	National Marine Fisheries Service, Woods Hole, Massachusetts
DR JAMIE GEIGER	US Fish and Wildlife Service, Hadley, Massachusetts
MR ROBERT A JONES	Connecticut River Salmon Association, S. Windsor, Connecticut
MR ARTHUR NEILL	National Marine Fisheries Service, Woods Hole, Massachusetts
MR RICHARD ROE	National Marine Fisheries Service, Gloucester, Massachusetts
DR DEAN SWANSON	National Marine Fisheries Service, Silver Springs, Maryland
MR STETSON TINKHAM	Department of State, Office of Fisheries Affairs, Washington DC

OBSERVERS - PARTIES

FINLAND

MR EERO NIEMELA	Representative Finnish Game and Fisheries Research Institute, Helsinki

ICELAND

*MR HELGI AGUSTSSON	Representative Icelandic Ambassador to the United Kingdom, London
MR ARNI ISAKSSON	Representative Institute of Freshwater Fisheries, Reykjavik

NORWAY

MR BØRRE PETTERSEN	President of NASCO Ministry of the Environment, Oslo
*MR SVEIN MEHLI	Representative Directorate for Nature Management, Trondheim
MR MARIUS HAUGE	Representative Royal Ministry of Fisheries, Oslo
DR LARS PETTER HANSEN	Norwegian Institute for Nature Research, Trondheim
MR GEORG RIEBER-MOHN	Ministry of the Environment, Oslo

SWEDEN

MR KARL-ERIK BERNTSSON	Representative National Board of Fisheries, Göteborg

ICES

DR EMORY D ANDERSON	International Council for the Exploration of the Sea, Copenhagen
DR ROGER BAILEY	International Council for the Exploration of the Sea, Copenhagen
DR FREDRIC M SERCHUK	National Marine Fisheries Service, Woods Hole, Massachusetts

SECRETARIAT

DR MALCOLM WINDSOR	Secretary
DR PETER HUTCHINSON	Assistant Secretary

ANNEX 2

WGC(93)8
TENTH ANNUAL MEETING OF THE WEST GREENLAND COMMISSION
7-11 JUNE 1993 BALMORAL HOTEL, EDINBURGH, SCOTLAND, UK

AGENDA

1. Opening of the Meeting
2. Adoption of the Agenda
3. Nomination of a Rapporteur
4. Non-Government Observers at Commission Meetings
5. Review of the 1992 Fishery and ACFM Report from ICES on Salmon Stocks in the Commission Area
6. Regulatory Measures
7. Recommendations to the Council on Scientific Research
8. Report on NASCO Tag Return Incentive Scheme and Announcement of Awards
9. Other Business
10. Date and Place of Next Meeting
11. Consideration of the Draft Report of the Meeting

ANNEX 3

COUNCIL

CNL(93)13

REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT

(SECTION 3)

3. INFORMATION OF INTEREST TO THE WEST GREENLAND COMMISSION

3.1 Description of the Fishery at West Greenland, 1992

In 1992, the fishery at West Greenland (NAFO Sub-area 1) was opened on 1 August and ended in November, although the official closing date was 31 December. The total nominal catch was 237 t which is 235 t less than in 1991, when the total landings were 472 t.

Quota and catch (t)

Year	1987	1988	1989	1990	1991	1992
Quota	935	-	900	924	840	-
Catch	966	893	337	274	472	237[1]

[1] Preliminary

No TAC was set for 1992, but the decision was to observe the landings after the first fourteen days of the fishery, and in the event of these being high compared to previous years, a TAC would be implemented. Because of small landings a TAC was never put into force.

The nominal landings during the first fourteen days, 1990-1992 (in tonnes)

Year	First seven days	First fourteen days	Dates
1980	260	711	01 - 14 Aug
1981	465	735	15 - 28 Aug
1982	470	766	25 Aug - 07 Sep
1983	105	192	10- 23 Aug
1984	17	58	10- 23 Aug
1985	204	361	01 - 14 Aug
1986	509	848	15 - 28 Aug
1987	439	737	25 Aug - 07 Sep
1988	219	337	25 Aug - 07 Sep
1989	131	219	18 - 31 Aug
1990	12	38	01 - 14 Aug
1991	115	208	05 - 18 Aug
1992	36	60	01 - 14 Aug

3.1.1 Composition and origin of the catch, 1992

Commercial catches in 1992 were composed of 54% North American (95% CL = 57,50), and 46% European (95% CL = 50, 43).

An alternative estimate of the overall proportion of North American- and European-origin salmon for the years 1982-1992 was derived by weighting NAFO Division samples by catch in numbers. Information from the nearest NAFO Division was applied to divisions with no samples. The table below gives the results:

Year	Weighted by catch in numbers				% of all samples	
	NA		EU			
	%	Wt (t)	%	Wt (t)	NA	EU
1982	57	-	43	-	62	38
1983	40	-	60	-	40	60
1984	54	-	46	-	50	50
1985	47	-	53	-	50	50
1986	59	537	41	423	57	43
1987	59	556	41	411	59	41
1988	42	349	58	544	43	57
1989	55	179	45	158	56	44
1990	78	213	22	62	75	25
1991	63	290	37	183	65	35
1992	45	108	55	129	54	46

ACFM is concerned about the lack of a suitable test sample of scales of known origin salmon for the discriminant analysis.

In 1992, the estimated number of fish caught was 38,500 from North America and 46,800 from Europe for a total of 85,300.

An estimate of the number of Maine-origin salmon harvested at West Greenland in 1992 using the proportional harvest method was 1,950 fish.

The incidence of reared Atlantic salmon in the catches at West Greenland was examined from scales taken from salmon sampled in the 1991 fishery. Reared salmon were observed in very low frequency (1.1%). An additional 2.6% of the number of fish examined could not be accurately classified although they showed similar scale characteristics to fish which had been released as smolts from hatcheries.

3.1.2 Biological characteristics of the harvest

As previously observed, North American 1SW salmon were significantly shorter and lighter than their European counterparts, both overall and on an individual NAFO Division basis. Two sea-winter salmon of North American origin were not different in length but were lighter than European-origin salmon both overall and between NAFO Divisions at the 5% level of significance.

The sea age composition in 1992 of 94.4% 1SW, 5.5% MSW, and 0.2% previous spawners indicated that there were proportionately fewer 1SW salmon and more MSW salmon than in 1991.

3.1.3 Historical data on tag returns and harvest estimates

The Carlin tag based harvest estimates of 1SW Maine-origin salmon for the 1991 fishery totalled 1,871 fish.

Carlin harvest estimate of Maine-origin salmon

Year	1986	1987	1988	1989	1990	1991
Harvest	2,035	2,087	2,309	3,797	1,525	1,871

The CWT harvest estimate for Maine-salmon in 1991 was 1,707 fish.

Carlin harvest estimate of Maine-origin salmon

Year	1987	1988	1989	1990	1991
Harvest	5,571	3,882	2,857	2,037	1.707

The proportional harvest method provides estimates of harvest significantly higher than the CWT method in recent years (Figure 3.1.3.1). As escapees from North American aquaculture facilities could increase the estimate provided by the proportional method, ACFM recommends further investigation of the possible explanation of the discrepancy between the two methods.

3.2 Description of Homewater Fisheries

Tagging experiments have demonstrated that almost all countries listed in the national catch tables (Table 1.1.1) contribute salmon to the West Greenland fishery. However, stocks from these countries contribute to the fishery to differing extents, both because the proportion of MSW salmon in the stocks varies and because of differences in their migratory behaviour at sea.

For European salmon stocks, the relative contributions have not been estimated precisely, although MSW stocks from the UK, Ireland, and France are thought to contribute to the fishery at a higher rate than Scandinavian stocks. Additional information on fisheries in the north-east Atlantic is contained in Section 2.

For North American salmon stocks, most of the salmon that contribute to the West Greenland fishery are produced in rivers of eastern Canada, with the balance originating from a few rivers in the northeastern US. Additional information on the fisheries in the north-west Atlantic is provided in Section 4.

3.3 Stock Abundance and Exploitation at West Greenland

Stock abundance and exploitation at West Greenland was estimated using the results of tagging experiments and the run reconstruction model for the North American stock

complex. The continental run reconstruction model provides a range of feasible exploitation rates and fractions of the population present in Canada and Greenland. In turn, these exploitation rates provide an estimate of the total population abundance at West Greenland prior to the fishery. Of course, the population at West Greenland consists of both North American and European stocks. It should be remembered that the pre-fishery abundance estimator reconstructs the population by summing 2SW returns, and catches from fisheries on non-maturing 1SW salmon in Canada and Greenland, and 2SW salmon in Canada. This value represents the extant population and does not account for the fractions of the population present in a given fishery (i.e. availability).

3.3.1 Continental run reconstruction model

Exploitation rates at West Greenland have been variable, showing marked dips in 1983-84 and 1989 and peaks in 1981-82, 1987 and 1991, but overall, the time series is without trend (Figure 3.3.1.1). The estimates of the exploitation rate at West Greenland are sensitive to the value of FU (Fraction of population not available to either the West Greenland or Canadian fishery) used; if a higher value of FU is chosen, then a smaller proportion of the stock will be estimated to be available to the West Greenland fishery and the estimate of exploitation rate will be increased.

The estimated abundance of stocks of all origins at West Greenland has declined fairly steadily from about 1 - 1.5 million at the start of the period to only 200,000-400,000 at the end (Figure 3.3.1.2). The abundance of European and North American stocks has changed very much in line with each other, although European stocks were more abundant at the beginning of the period but less abundant at the end (Figure 3.3.1.3).

3.3.2 Exploitation of Maine (USA) stocks

The extant exploitation rates for 1SW Maine origin salmon in 1991 ranged between 61 and 78% and were the highest in the time series. The extant exploitation rate for 2SW fish was estimated to be over 90% for all combinations of parameters; it was also one of the highest recorded since 1967. The fishery area exploitation rates for US stocks in 1991 in both Canada and Greenland were among the highest estimated for any year since 1967.

The exploitation rates for the Maine stock at West Greenland and in Canada are plotted with the results of the constraints model in Figure 3.3.2.1. For the constraints model the mid-point between the minimum and maximum estimates is used. For the estimates on the Maine stock the results for P=0.1 are used, as this is the closest to the values of P (fraction of extant population available to fishery in Canada) derived from the constraints model. There is close similarity between the estimates by the two independent methods, particularly since 1982. The results suggest that exploitation rates derived for Maine stocks do not deviate markedly from the overall magnitude and temporal pattern of exploitation rates for the aggregate North American stock complex.

3.3.3 Numerical contributions of salmon stocks to the fishery and exploitation of individual stocks

A maximum likelihood approach to estimate the relative contribution of northern and southern components of the North American stock complex to West Greenland was applied using river age data. The results suggest that the proportion of northern stocks at Greenland has declined greatly since 1974 (Figure 3.3.3.1). Analysis of the overall catches (Figure 3.3.3.2) of the stock complexes suggests that both groups have declined in abundance.

3.3.4 Relative importance to stocks of regulatory measures in the fishery and homewaters

Since the early 1970s both Canada and Greenland have imposed a variety of management measures designed to reduce fishing mortality on stocks. Greenland excluded foreign vessels in 1976 and reduced its quota in 1984 from 1,190 t to 870 t. In 1984, Canada introduced a series of reductions in fishing effort including license buy-out programs, season and regional closures, and quota restrictions. These efforts culminated in 1992 with a moratorium on commercial fisheries in insular Newfoundland, a licence buy-back programme, and the imposition of quotas on recreational fisheries. In spite of these changes, population abundance of the MSW component of the stock has continued to decline.

Estimates of pre-fishery abundance, and numerous other indicators of stock status reveal that the restrictive management measures in Canada and, to a lesser extent, Greenland have coincided with a period of increasing marine mortality.

In order to assess what would have happened without such regulations, ACFM considered the following three scenarios to project the effects of regulations on returning 2SW salmon:

1. What if the quota at West Greenland had remained at 1,190 t?

2. What if Canada had not restricted fishing effort in the Newfoundland-Labrador commercial fishery?

3. What would be the combined effects of 1) and 2)?

Scenario 1. Effects of 1,190 t Greenland Quota

Projected effects of a 1,190 t Greenland quota are shown in Figure 3.3.4.1. As the quota was limiting on catches only in 1985-1988, the projected consequences suggest that about 50,000 North American salmon were saved per year between 1985-1988. Similar numbers of European origin salmon would also have been saved, but their subsequent fate cannot be evaluated.

Scenario 2. Effects of effort reductions of the Newfoundland-Labrador Commercial Fishery in Canada

Results of this scenario (Figure 3.3.4.2) show that the effort reductions have saved about 50,000 salmon destined to have been 2SW returns per year since 1985 and almost 60,000 salmon in 1992. Conversely, without effort restrictions, actual 2SW returns would have been reduced by 50,000 salmon per year.

Scenario 3. Cumulative Effect of Quotas and Effort Reduction

The penalty for a high quota and high effort (Figure 3.3.4.3) suggests that an additional 70,000 2SW salmon (an increase of about 20,000) salmon would have been harvested in 1985-1988. The effects of both scenarios are not additive.

Overall, the scenarios suggest that substantial savings of 2SW returns to home river areas of North America have occurred as a result of regulatory measures in the Newfoundland-Labrador commercial fishery. Additional benefits to spawning populations would also have resulted from the prohibition on retention of large salmon in most Canadian angling fisheries, season and daily bag limit reductions for angling in Quebec, Labrador and Maine, closures of the Gaspé, New Brunswick, Nova Scotia and Prince Edward Island commercial fisheries and reduction in the commercial fisheries of Quebec. The benefits of the reduced quota are intermittent and related to the availability of salmon at Greenland. Substantial reductions in harvest occurred in Greenland between 1972-1976 as a result of quota regulations; this time period, however, cannot be assessed using this methodology. In years when the stocks are low, a fixed quota will result in increased exploitation.

3.3.5 Relationship between the abundance of grilse and multi-sea-winter salmon in the returns to homewaters and its effect on the management of the fishery

ACFM was unsure of the intent of this question; thus, three different responses were considered. One response dealt with the utility of estimates of the population size of grilse returns to homewaters in predicting or forecasting the population size of 2SW salmon returning the following year. The second response considered the effects of changing the grilse:multi-sea-winter salmon ratio in the spawning population on production of MSW salmon. The third response considers how fisheries in homewaters can be manipulated to account for differences in relative abundances of grilse and multi-sea-winter salmon.

Application of grilse returns to forecast 2SW salmon returns

Forecasts of 2SW salmon returns based on 1SW returns have been used with varying success throughout North America and Europe. Simple linear regression techniques have been tested for the rivers Tay and North Esk, in Scotland; used with greater success in the LaHave and the Liscomb rivers, Nova Scotia; and on various rivers in Iceland. A multiple linear regression has been adopted on the Saint John River, New Brunswick to forecast MSW returns from data on numbers and size of grilse returns.

Nonparametric approaches for forecasting MSW salmon from 1SW returns are being used for the Miramichi River.

Effects of changing the grilse:multi-sea-winter salmon ratio in the spawning population on production of MSW salmon.

Sea-age at maturity is believed to be influenced by both genetics and environmental effects. There is evidence that the progeny of grilse produce proportionately more salmon that mature as grilse than progeny from 2SW salmon. It has also been demonstrated both in nature and in husbandry settings that temperature and climate can influence maturation. Selective fishing has an influence on the age of maturity of spawners which may have long-term genetic effects. ACFM was not aware of any studies that demonstrated that the increase in the number of grilse spawners in a river has resulted in a genetic shift to earlier maturation, or grilsification of the stock. However, concern was expressed that this may occur.

Manipulation of fisheries to account for differential abundance

The abundance of grilse versus multi-sea-winter salmon in a stock may be variable. Fishery managers may consider options to adjust the harvest pressure on a particular sea-age category needing additional protection. Where these two sea-age categories are mixed in a fishery, options may include a change in gear or prohibited retention. When the grilse and MSW stocks are not mixed, fisheries can be regulated by opening and closing seasons of the fisheries to reduce exploitation on a specific sea-age. Examples of these possibilities were noted in Canada's management actions since 1984 to reduce exploitation on MSW salmon stocks.

3.4 Advice on Catch Levels at West Greenland

In previous years, ACFM was asked to propose and evaluate methods to estimate possible catch levels based upon maintaining adequate spawning biomass. The aim of advice would be to limit catch to a level that would facilitate achieving overall spawning escapement equivalent to the sum of spawning targets in individual North American and European rivers (when the latter have been defined). To achieve the desired level of exploitation for a given level of predicted abundance either a TAC could be fixed or some form of effort limitation introduced.

Although advances have been made in our understanding of the population dynamics of Atlantic salmon and the exploitation occurring in the fisheries, the concerns about the implications of application of TACs to mixed stock fisheries are still relevant. In principle, reductions in catches in mixed stock fisheries provided via an annually adjusted TAC would reduce mortality on the population as a whole. However, benefits that might accrue to particular stocks would be difficult to demonstrate, in the same way that detriments to individual stocks are difficult to identify.

Effort limitation would, in theory, provide a greater range of options for management, such as season length restrictions, regulating number of boats or licences or closed periods in the fishery. However, it was felt that the diversity of boat types and sizes and their large numbers would make effort limitation difficult in practice, particularly

because no reliable data exist on the relationship between effort and exploitation in the fishery.

The advice for any given year is dependent on obtaining a reliable predictor of the abundance of non-maturing 1SW abundance for North American stocks prior to the start of the fishery in Greenland. Prediction of this pre-fishery abundance of 1SW salmon destined to return as 2SW salmon is difficult. Such predictions have wide confidence intervals and it would be prudent to use the lower range of predicted abundance levels for management decisions.

3.4.1 Estimating the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery

The 1993 pre-fishery abundance of non-maturing 1SW salmon of North American origin (the abundance relevant to 1SW fisheries in Canada and Greenland in 1993 and the 2SW salmon fishery in Canada in 1994) was forecasted using two main methods.

The first method involved the use of a univariate time series model. The second method was a regression model in which the independent variable was an estimate of overwintering habitat in the Labrador Sea. Overwintering habitat was defined as a weighted sum of areal sea surface temperatures multiplied by average catch rates at each temperature (Figure 3.4.1.1). The relationship between abundance and catch rate weighted habitat in March was found to be significant (Figure 3.4.1.2).

Forecasts of the pre-fishery abundance for the 1993 fishery year were computed as point estimates (based on the mid-point of historical ranges) and as statistical distributions or stochastic processes utilizing information on the distribution of historical pre-fishery abundances. In addition, a provisional estimate of the 1992 pre-fishery abundance (N1*) was also developed thus allowing forecasts to be made for a single year instead of two years ahead (Figure 3.4.1.3).

Estimates of 1993 pre-fishery abundances are summarized in Table 3.4.1.1 and presented graphically in Figure 3.4.1.4. Regression forecasts are slightly higher than forecasts based on the univariate time series model. The inclusion of the N1* estimate has the effect of lowering both univariate and regression forecasts; this reflects both the low Greenland catch and the low habitat value for 1992. The use of stochastic forecast procedures also had the effect of lowering forecast values compared to estimates based on pre-fishery midpoints. This is due to skewed yearly distributions of pre-fishery abundance. The stochastic regression forecast utilizing N1* is the most robust forecast since it is the technique based on our best biological understanding of the recruitment process and includes information about the statistical error structure of the datasets involved.

ACFM noted the annual fluctuations in the estimates of abundance of salmon at West Greenland (Figure 3.3.1.2) and examined the year to year changes in these values relative to the overall mean.

	Low (i+1)	High (i+1)
Low (i)	9	1
High (i)	2	5

year in parentheses

This analysis indicated that most years when abundance was estimated to be low (i.e. below the 17 year mean) were followed by years when abundance was again low and most years when abundance was high were followed by years when abundance was again high. In 1990 and 1991, the values were the lowest in the time series of pre-fisheries abundance. Thus, some sort of qualitative assessment of the likely level of pre-fishery abundance of 1SW fish at Greenland for a current year could be obtained from knowledge of the preceding year's abundance estimate.

3.4.2 Development of a model to set catch quotas in relation to stock abundance

A worked example of a model to set catch quotas in relation to stock abundance with assessment of the probability of achieving adequate spawning biomass is described. To achieve the spawning management goal, a pool of fish must be set aside prior to fishery allocation in order to meet spawning targets and allowing for natural mortality in the intervening months between the fishery and spawning migration. ACFM identified 193,306 fish as the spawning target for the North American stock complex. Thus, 219,132 pre-fishery abundance fish must be reserved (196,306/exp*(-.01*11)) to ensure achievement of the target.

Given an agreed estimate of the total pre-fishery abundance of non-maturing North American stocks, this abundance minus the spawning reserve is the pool of fish available for harvest in all relevant fisheries (Table 3.4.2.1). The pre-fishery population is viewed as an extant population in this context, thus, availability is unknown and not predicted. The portion of the population in excess of the spawning reserve is divided between harvest in North America and Greenland. From the number of pre-fishery abundance fish designated for harvest in Greenland (NA1SW), the number of European origin pre-fishery abundance fish that contribute to the quota (E1SW) is estimated:

E1SW = (NA1SW/PropNA)-NA1SW

Where:

PropNA = the proportion of the total number of 1SW fish at West Greenland which is of North American origin.

The quota is then computed by:

Quota = (NA1SW*WT1SWNA+E1SW*WT1SWE)*ACF

Where:

E1SW = the Greenland allocation of pre-fishery European 1SW salmon

WT1SWNA = mean weight of North American 1SW salmon at Greenland

WT1SWE = mean weight of European 1SW salmon at Greenland

and

ACF = age correction factor to account for multi-sea-winter salmon in the catch, based on total weight of the catch divided by the weight of 1SW salmon

The data necessary to perform the quota calculations are based on the following forecasts:

Parameter	Value
PropNA	0.540
WT1SWNA	2.525
WT1SWE	2.660
ACF	1.121

The fishery allocation to North America can be harvested in 1SW fisheries in 1993 and/or in 2SW fisheries in 1994. It must be remembered that natural mortality will reduce the numbers of fish to be harvested in 2SW fisheries from the number allocated from the pre-fishery abundance.

This procedure can be expressed graphically. Allocation of extant pre-fishery abundance salmon can be determined in respect to the advice on pre-fishery abundance forecasts by selecting a forecast value of pre-fishery abundance (Figure 3.4.2.1). Translating vertically from this estimate level and observing where the line intersects the allocation curve pairs for various allocation schemes, the allocation can be read on the Y-axis.

Using the above formulation, Greenland allocation levels were computed for each forecast over a range of pre-fishery abundance values (Table 3.4.2.2) and quota options ranging from 42 to 209 tonnes. This catch advice is predicated on allocation of the predicted abundance of salmon and provides no guidance on salmon availability or fishing patterns. Yet quotas of these magnitudes will be expected to have consequences on fishing mortality. To illustrate, the exploitation at West Greenland was computed for a range of catch level using the results of the run reconstruction model to predict mean availability (availability at West Greenland = 1-(mean P)-FU=0.6). These computations suggest it would be impossible to catch more than 740 t due to availability and that catch between 300 and 400 t would result in exploitation rates of approximately 45%, or levels similar to those observed in recent years of the fishery (based on results of run reconstruction model). Catch in the range of options consistent with the catch advice described above would result in exploitation rates below 30% (Figure 3.4.2.2).

3.4.3 Assessment of risk of not achieving management objective of adequate spawning biomass

In North America, relationships between the amount of spawning and subsequent recruits have been identified in some Atlantic salmon populations with recruitment reaching a maximum at an intermediate level of spawning. Consequently, for salmon, fisheries management practices can maximize recruitment by ensuring that an optimum number of salmon are allowed to spawn. The further the spawning escapement is below the target egg deposition (or biological level to maintain optimal production), and the longer this situation occurs, even at rates only slightly below that level, the greater the possibility exists of incurring the following risks, some of which may cause irreversible damage to the stock:

1. Accentuation of annual fluctuations in run size and reduction in the long term capability of the stock to sustain exploitation;

2. Increased susceptibility to extinction from genetic, demographic, or environmental catastrophes and consequent decreases in productivity;

3. Permanent change in demographic characteristics of the spawning population; and

4. Possible replacement in the ecosystem by other competing fish species of potentially less social and economic value.

The probability that the true stock abundance is greater or lower than the value selected (Figure 3.4.2.1) provides a measure of the probability of reaching escapement targets assuming fishery allocations are exactly taken. The probability levels associated with certain reference points can be classified into broad categories termed "risk neutral", "risk averse", and "risk prone". The mean estimate of the forecast represents a reference point at which there is a 50% chance that the true abundance is lower than required to achieve the spawning target. This level is termed the "risk neutral" forecast. Likewise, the forecast value at the 25th percentile, or the value with a 25% chance that the abundance is lower, is the "risk averse" forecast. The forecast value at the 75th percentile, or the value with a 75% chance that the abundance is lower, is the "risk prone" forecast.

If a risk averse approach to protecting returns to homewaters were to be adopted for 1993, no catches of potential 2SW salmon could be permitted in either Greenland or Canada. Even if the "risk neutral" scenario were to be adopted, the catch allowances would be small and would result in either very low allowable catches in Greenland or Canada or no allocation to one or other of the countries and a small permitted catch in the other. Adoption of a risk prone approach, i.e., assume the 75th percentile of the forecast of 363,000 fish, would probably mean that the numbers of 2SW salmon returning to North American homewaters in the year following the fishery would be insufficient to meet target spawning requirements (Table 3.4.2.1).

ACFM will employ a risk neutral approach in the formulation of its management advice. However, the current status of the stocks should be considered in management decisions.

It must also be noted that basing catch advice on estimated stock abundance of Canadian non-maturing 1SW fish may carry with it additional risks of over-exploiting particular stocks or stock complexes that are more vulnerable than the average, for example because they have lower productivity. This will have the effect of increasing the risks for certain stocks at all levels of catch, while decreasing the risks for others. The long term catch advice for the mixed stock fisheries should be based upon the stock complexes that are most vulnerable.

3.5 By-catch and mortality of salmon in non-directed fisheries

The only other fisheries likely to catch salmon in West Greenland are those where gill nets are set for arctic charr. However, these nets are set in the fjords at a time of year when salmon are either not present or in very low abundance. It is thought that by-catches of salmon are of negligible proportions.

3.6 Effects of the NASCO Tag Return Incentive Scheme

A direct estimator of reporting rate in the West Greenland fishery, based on comparison of Carlin and coded-wire tag recoveries in West Greenland for the period 1987 to 1991, was evaluated.

Reporting rates in Greenland appear to have increased appreciably in 1989 to levels 2 to 3 times higher than evident in 1987 and 1988. The low numbers of Carlin-tagged 2SW salmon returning to Maine rivers and the low numbers recovered in Greenland result in high variability in the reporting rate estimate (Figure 3.6.1).

These data suggest that the NASCO lottery scheme increased the Carlin tag reporting rates in the West Greenland fishery. The resulting estimate had wide confidence intervals; thus, the rate could not be shown to be statistically significant.

Table 1.1.1 Nominal catch of SALMON by country (in tonnes round fresh weight), 1960-1992 (1992 provisional figures).

Year	Canada (5)	Den.	Faroes	Finland	France	East Grld.	West Grld.	Iceland	Ireland (1, 3)	Norway (4)	Russia	St. P & M.	Sweden (WC)	UK E&W	UK Scotland	UK N.I.(1,2)	USA	Others (6)	Total
1960	1636	-	-	-	-	-	60	100	743	1659	1100	-	40	283	1443	139	1	-	7204
1961	1583	-	-	-	-	-	127	127	707	1533	790	-	27	232	1185	132	1	-	6444
1962	1719	-	-	-	-	-	244	125	1459	1935	710	-	45	318	1738	356	1	-	8650
1963	1861	-	-	-	-	-	466	145	1458	1786	480	-	23	325	1725	306	1	-	8576
1964	2069	-	-	-	-	-	1539	135	1617	2147	590	-	36	307	1907	377	1	-	10725
1965	2116	-	-	-	-	-	861	133	1457	2000	590	-	40	320	1593	281	1	-	9392
1966	2369	-	-	-	-	-	1370	106	1238	1791	570	-	36	387	1595	287	1	-	9750
1967	2863	-	-	-	-	-	1601	146	1463	1980	883	-	25	420	2117	449	1	-	11948
1968	2111	-	5	-	-	-	1127	162	1413	1514	827	-	20	282	1578	312	1	403	9755
1969	2202	-	7	-	-	-	2210	133	1730	1383	360	-	22	377	1955	267	1	893	11540
1970	2323	-	12	-	-	-	2146	195	1787	1171	448	-	20	527	1392	297	1	922	11241
1971	1992	-	-	-	-	-	2689	204	1639	1207	417	-	18	426	1421	234	1	471	10719
1972	1759	-	9	32	34	-	2113	250	1804	1568	462	-	18	442	1727	210	1	486	10915
1973	2434	-	28	50	12	-	2341	256	1930	1726	772	-	23	450	2006	182	2.7	533	12746
1974	2539	-	20	76	13	-	1917	225	2128	1633	709	-	32	383	1708	184	0.9	373	11941
1975	2485	-	28	76	25	-	2030	266	2216	1537	811	-	26	447	1621	164	1.7	475	12209
1976	2506	-	40	66	9	<1	1175	225	1561	1530	772	2.5	20	208	1019	113	0.8	289	9536
1977	2545	-	40	59	19	6	1420	230	1372	1488	497	-	10	345	1160	110	2.4	192	9495
1978	1545	-	37	37	20	8	984	291	1230	1050	476	-	10	349	1323	148	4.1	138	7650
1979	1287	-	119	26	10	<1	1395	225	1097	1831	455	-	12	261	1076	99	2.5	193	8089
1980	2680	-	536	34	30	<1	1194	249	947	1830	664	-	17	360	1134	122	5.5	277	10080
1981	2437	-	1025	44	20	<1	1264	163	685	1656	463	-	26	493	1233	101	6	313	9929
1982	1798	-	865	54	20	<1	1077	147	993	1348	354	-	25	286	1092	132	6.4	437	8634
1983	1424	-	678	57	16	<1	310	198	1656	1550	507	3	28	429	1221	187	1.3	466	8731
1984	1112	-	628	44	25	<1	297	159	829	1623	593	3	40	345	1013	78	2.2	101	6892
1985	1133	-	566	49	22	7	864	217	1595	1561	659	3	45	361	913	98	2.1	-	8095
1986	1559	-	530	38	28	19	960	310	1730	1598	608	2.5	54	430	1271	109	1.9	-	9248
1987	1784	-	576	49	27	<1	966	222	1239	1385	564	2	47	302	922	56	1.2	-	8142
1988	1311	-	243	34	32	4	893	396	1874	1076	419	2	40	395	882	114	0.9	-	7716
1989	1139	-	364	52	14	<1	337	278	1079	905	359	2	29	296	895	142	1.7	-	5893
1990	911	13	315	59	15	<1	274	426	586	930	315	2	33	338	624	94	2.4	-	4937
1991	711	3.3	95	69	13	4	472	505	404	876	215	1	38	200	462	55	0.8	-	4124
1992	470	10	23	78	20	5	237	590	630	850	161	1.3	49	195	525	151	0.7		3996
5YM	1171	-	319	53	20	2	588	365	1036	1034	374	2	37	306	757	92	1	-	6162
10YM	1288	-	486	51	21	4	645	286	1199	1285	459	2	38	338	930	107	2	-	7241

5YM - 1987-1991 Mean

10YM - 1982-1991 Mean

1. Catch on River Foyle allocated 50% Ireland and 50% N. Ireland.
2. Not including angling catch (mainly 1SW).
3. Includes only those catches sold through dealers
4. Before 1966, sea trout and sea charr included (5% of total).
5. Includes estimates of some local sales, and, prior to 1984, by-catch.
6. Includes catches in Norwegian Sea by vessels from Denmark, Sewden, Germany, Norway and Finland

Table 3.4.1.1. Summary of forecasting methods to estimate 1993 pre-fishery abundance.

Analytical Approach	Parameter	Deterministic Model	Stochastic Model
Univariate Time Series 2-year ahead forecasts based on 1974-91 estimates of pre-fishery abundance	Input Data	Mid-range of N1	200 simulated realizations
	Mean Forecast	258000	250000
	Std. Err. of Estimate	131200	137000
	Acronym	UF	SUF
Univariate Time Series 1-year ahead forecasts based on 1974-91 pre-fishery abundance and imputed value for 1992	Input Data	Mid-range of N1 plus N1*	200 simulated realizations
	Mean Forecast	238000	235000
	Std. Err. of Estimate	126400	132000
	Acronym	UFN1*	SUFN1*
Regression of pre-fishery abundance estimates (1974-91) vs marine habitat indices. Estimate for 1993 based on March 1993 habitat index.	Input Data	Mid-range of N1vs habitat	200 simulated realizations
	Mean Forecast	275000	275000
	Std. Err. of Estimate	146500	155000
	Acronym	RF	SRF
Regression of pre-fishery abundance estimates (1974-91) and imputed value for 1992 vs marine habitat indices. Estimate for 1993 based on March 1993 habitat index.	Input Data	Mid-range of N1vs habitat plus N1*	200 simulated realizations
	Mean Forecast	257000	258000
	Std. Err. of Estimate	143700	152000
	Acronym	RFN1*	SRFN1*

Table 3.4.2.1. Pre-fishery abundance levels from univariate and regression forecasts at probabilty levels between 25 and 75%.

Cumulative Density Function %	Forecast							
	UF	UFN1*	SUF	SUFN1*	RF	RFN1*	SRF	SRFN1*
25	153000	138000	157000	145000	170000	154000	168000	153000
30	176000	160000	174000	165000	193000	177000	192000	176000
35	198000	181000	197000	184000	215000	198000	214000	198000
40	218000	200000	215000	201000	235000	218000	235000	218000
45	238000	219000	233000	218000	255000	238000	255000	238000
50	258000	238000	250000	235000	275000	257000	275000	258000
55	277000	256000	268000	251000	294000	276000	295000	277000
60	297000	275000	285000	268000	314000	295000	316000	297000
65	318000	294000	303000	286000	335000	315000	337000	318000
70	339000	315000	323000	304000	356000	336000	359000	339000
75	363000	337000	344000	324000	380000	359000	383000	363000

Table 3.4.2.2. Quota (in tonnes) options at West Greenland based on univariate and regression forecasts of fishery abundance. Greenland proportion refers to fraction of harvestable surplus allocated to the Greenland fishery. Probabity level assocated with pre-fishery abundance levels derived from probabilty density function.

Greenland Proportion	Probability Level	Forecast							
		UF	UFN1*	SUF	SUFN1*	RF	RFN1*	SRF	SRFN1*
1	25	0	0	0	0	0	0	0	0
	30	0	0	0	0	0	0	0	0
	35	0	0	0	0	0	0	0	0
	40	0	0	0	0	85	0	85	0
	45	101	0	74	0	193	101	193	101
	50	**209**	**101**	**166**	**85**	**300**	**203**	**300**	**209**
	55	311	198	262	171	402	305	407	311
	60	418	300	354	262	510	407	520	418
	65	531	402	450	359	622	515	633	531
	70	644	515	558	456	735	628	751	644
	75	773	633	671	563	864	751	880	773
0.8	25	0	0	0	0	0	0	0	0
	30	0	0	0	0	0	0	0	0
	35	0	0	0	0	0	0	0	0
	40	0	0	0	0	68	0	68	0
	45	81	0	60	0	154	81	154	81
	50	**167**	**81**	**133**	**68**	**240**	**163**	**240**	**167**
	55	249	158	210	137	322	244	326	249
	60	335	240	283	210	408	326	416	335
	65	425	322	360	287	498	412	506	425
	70	515	412	446	365	588	502	601	515
	75	618	506	536	451	691	601	704	618
0.6	25	0	0	0	0	0	0	0	0
	30	0	0	0	0	0	0	0	0
	35	0	0	0	0	0	0	0	0
	40	0	0	0	0	51	0	51	0
	45	61	0	45	0	116	61	116	61
	50	**125**	**61**	**99**	**51**	**180**	**122**	**180**	**125**
	55	186	119	157	103	241	183	244	186
	60	251	180	212	157	306	244	312	251
	65	319	241	270	215	373	309	380	319
	70	386	309	335	273	441	377	451	386
	75	464	380	402	338	518	451	528	464
0.5	25	0	0	0	0	0	0	0	0
	30	0	0	0	0	0	0	0	0
	35	0	0	0	0	0	0	0	0
	40	0	0	0	0	43	0	43	0
	45	51	0	37	0	96	51	96	51
	50	**104**	**51**	**83**	**43**	**150**	**102**	**150**	**104**
	55	155	99	131	86	201	153	204	155
	60	209	150	177	131	255	204	260	209
	65	265	201	225	180	311	257	317	265
	70	322	257	279	228	368	314	376	322
	75	386	317	335	282	432	376	440	386
0.4	25	0	0	0	0	0	0	0	0
	30	0	0	0	0	0	0	0	0
	35	0	0	0	0	0	0	0	0
	40	0	0	0	0	34	0	34	0
	45	41	0	30	0	77	41	77	41
	50	**83**	**41**	**66**	**34**	**120**	**81**	**120**	**83**
	55	124	79	105	68	161	122	163	124
	60	167	120	142	105	204	163	208	167
	65	212	161	180	144	249	206	253	212
	70	258	206	223	182	294	251	300	258
	75	309	253	268	225	346	300	352	309
0.2	25	0	0	0	0	0	0	0	0
	30	0	0	0	0	0	0	0	0
	35	0	0	0	0	0	0	0	0
	40	0	0	0	0	17	0	17	0
	45	20	0	15	0	39	20	39	20
	50	**42**	**20**	**33**	**17**	**60**	**41**	**60**	**42**
	55	62	40	52	34	80	61	81	62
	60	84	60	71	52	102	81	104	84
	65	106	80	90	72	124	103	127	106
	70	129	103	112	91	147	126	150	129
	75	155	127	134	113	173	150	176	155

Figure 3.1.3.1. Comparison of harvest estimates of Maine origin salmon at West Greenland, 1987-92.

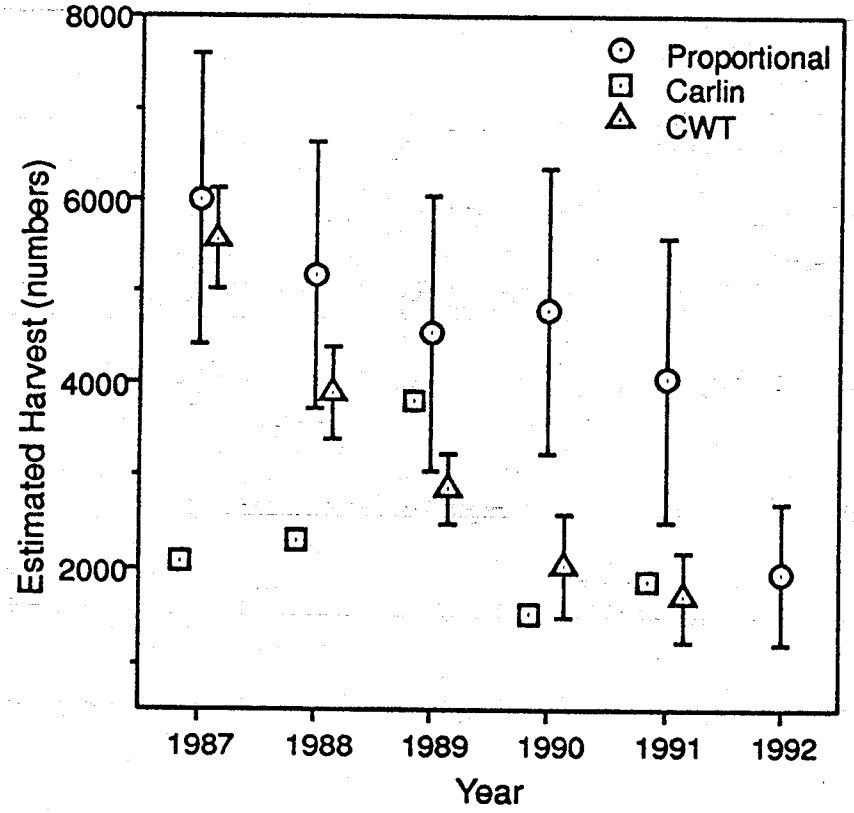


Figure 3.3.1.1. Minimum and maximum estimates of exploitation rates on non-maturing 1SW North American salmon at West Greenland, 1974-91.

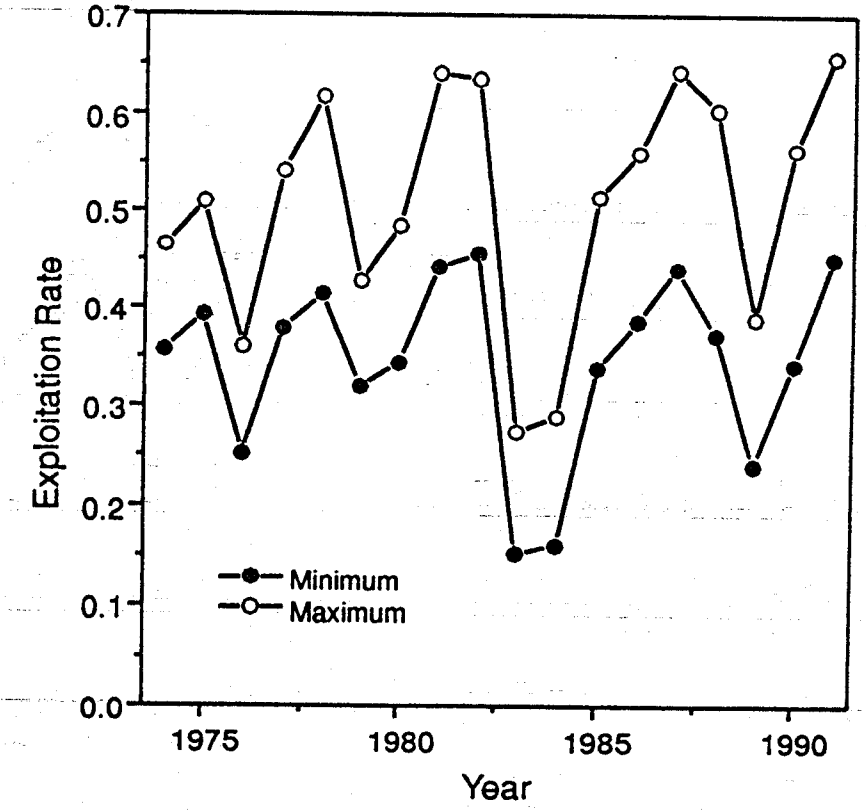


Figure 3.3.1.2. Minimum and maximum estimates of total stock abundance of Atlantic salmon at West Greenland, 1974-91.

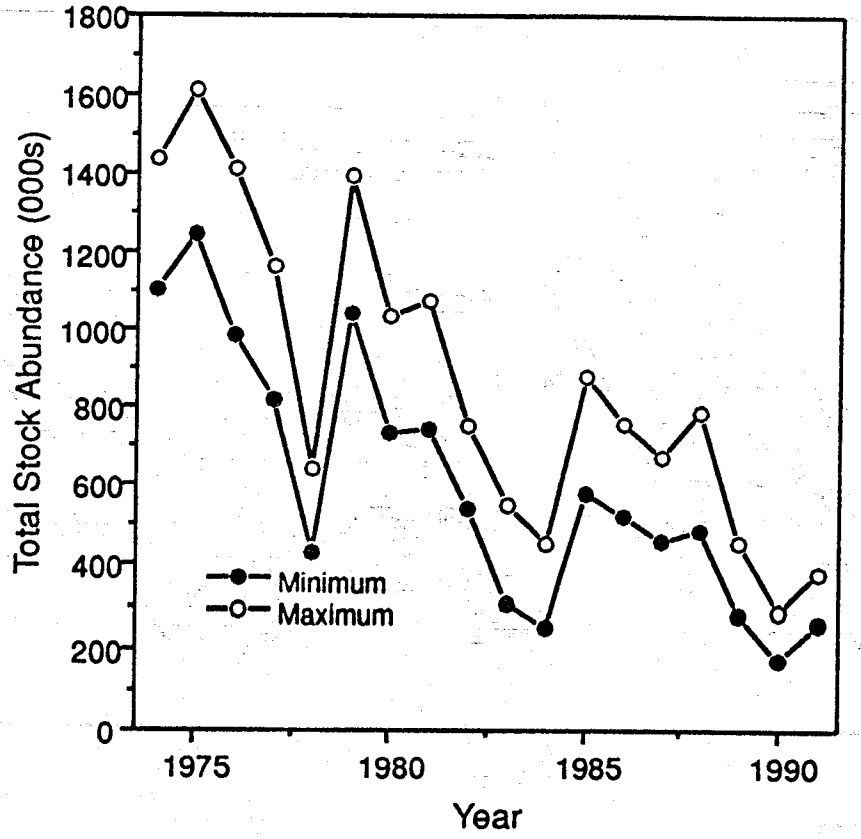


Figure 3.3.1.3. Minimum and maximum estimates of stock abundance of North American and European Atlantic salmon at West Greenland, 1974-91.

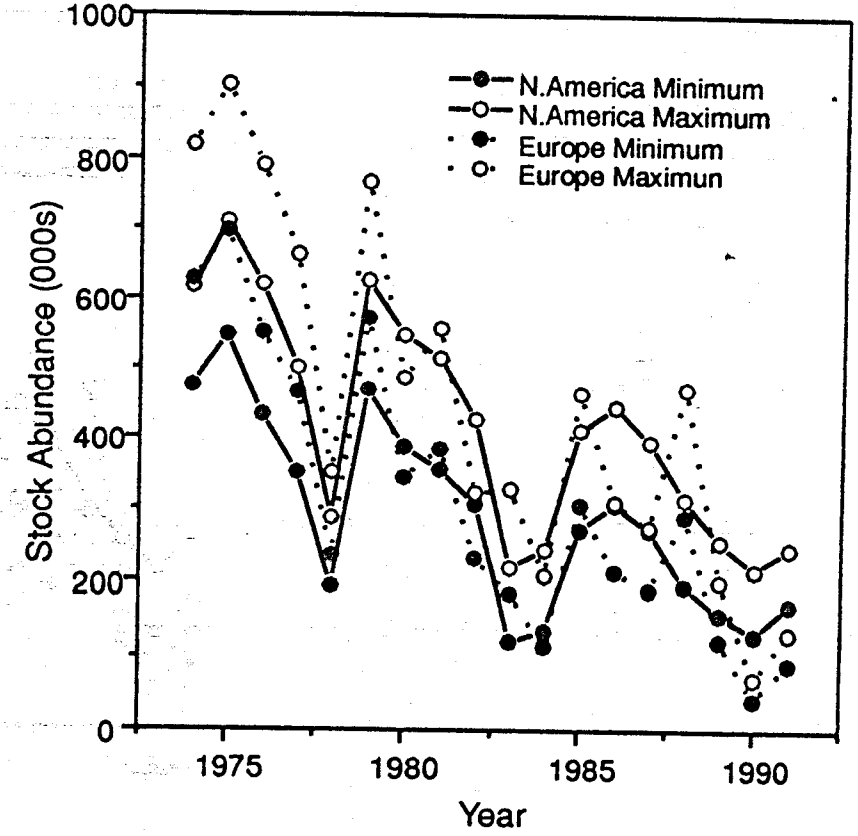


Figure 3.3.2.1. Comparison of exploitation rates in Canada and Greenland as determined by tagging experiments with Maine stocks (P=0.1) and by the continental run-reconstruction model.

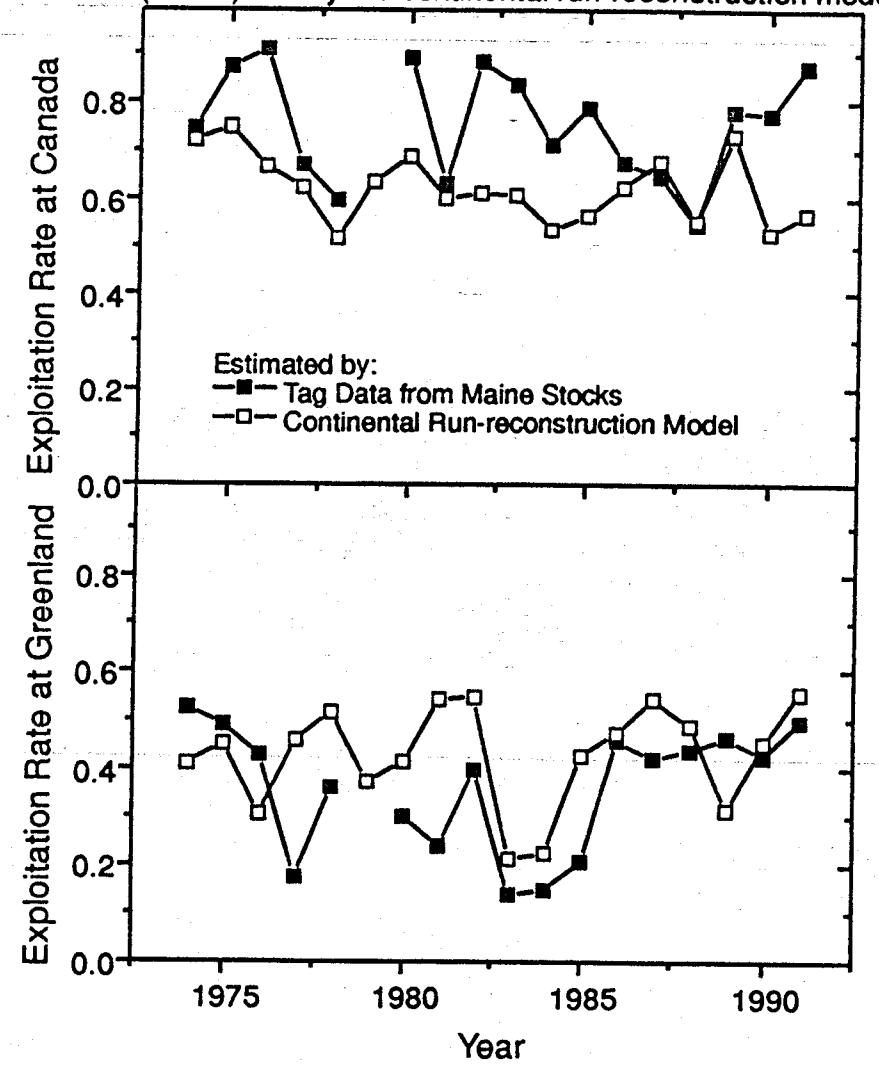


Figure 3.3.3.1. Proportional contribution of the northern North American stock complex to the West Greenland fishery, 1974-92.

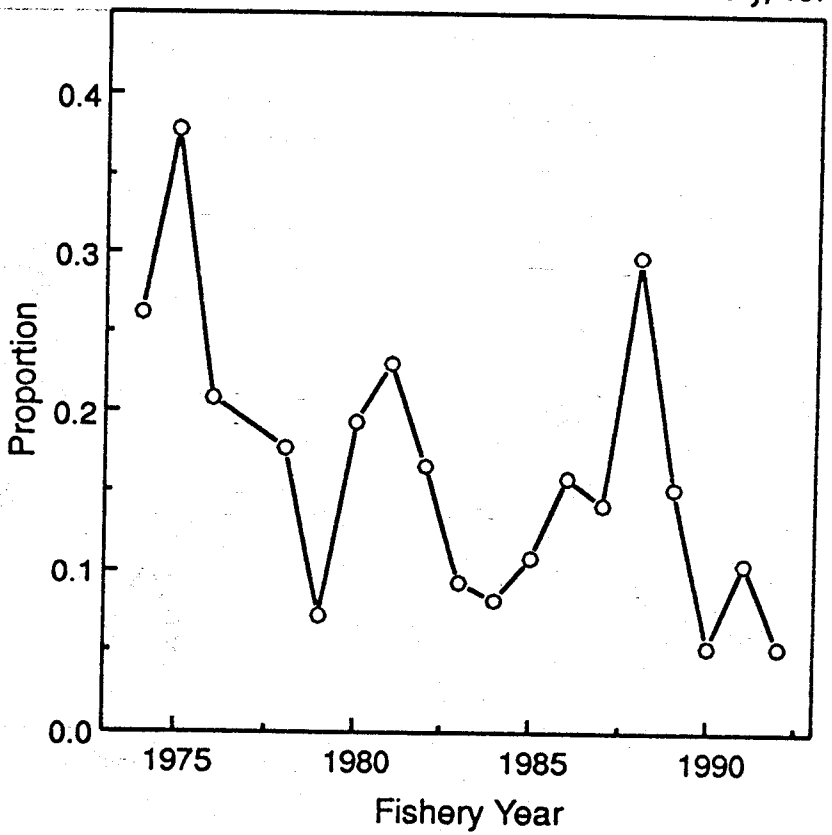


Figure 3.3.3.2. Estimated catches of northern and southern North American stock complexes at West Greenland, 1974-92.

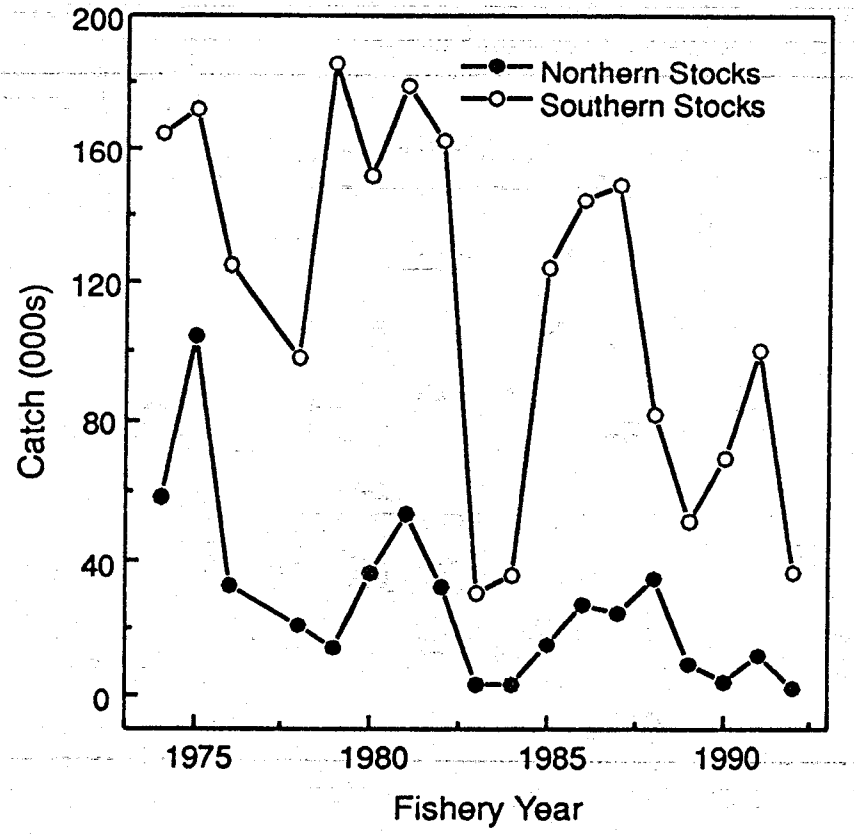


Figure 3.3.4.1. Comparison of observed returns of 2SW salmon to North America and projected returns assuming that the Greenland quota had not been reduced from 1190t.

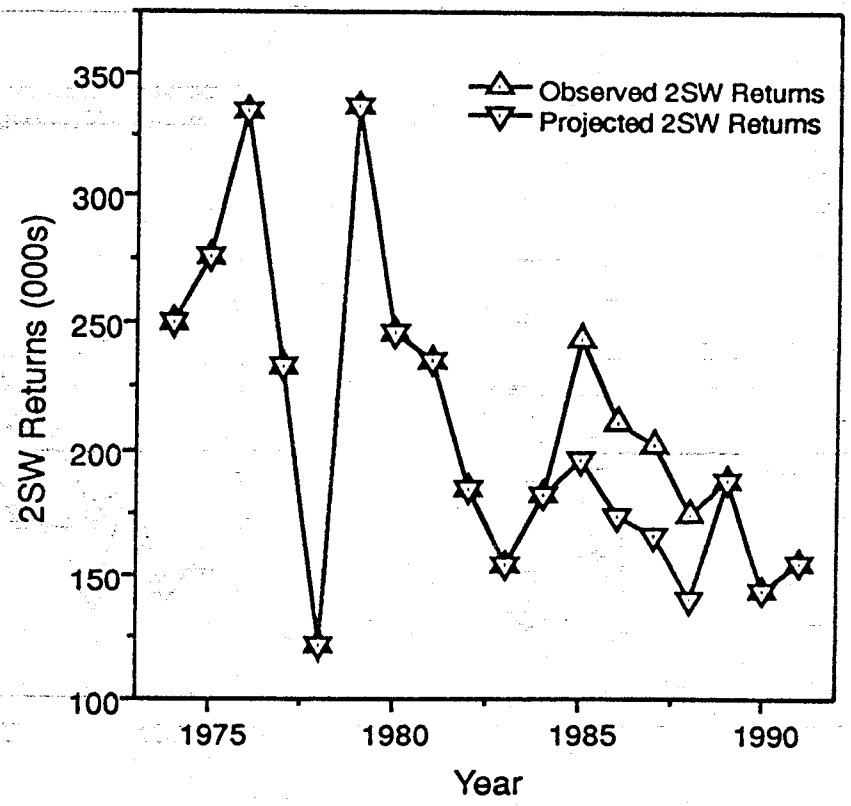


Figure 3.3.4.2. Comparison of observed returns of 2SW salmon to North America and projected returns assuming that Canada had not reduced fishing mortality from the average exploitation rate of 0.44 in 1974-77 in the Newfoundland-Labrador fishery.

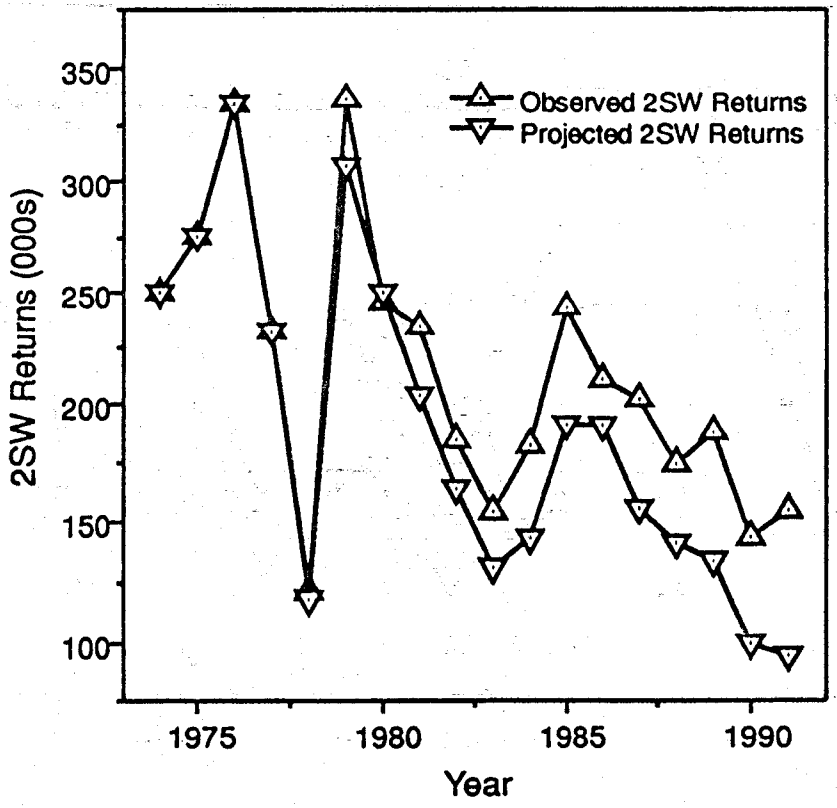


Figure 3.3.4.3. Comparison of observed returns of 2SW salmon to North America and projected returns based on the combined effects of 1) no reduction of the Greenland quota from 1190t and 2) no reduction in exploitation in Nfld.-Lab. from 1974-77 average of 0.44.

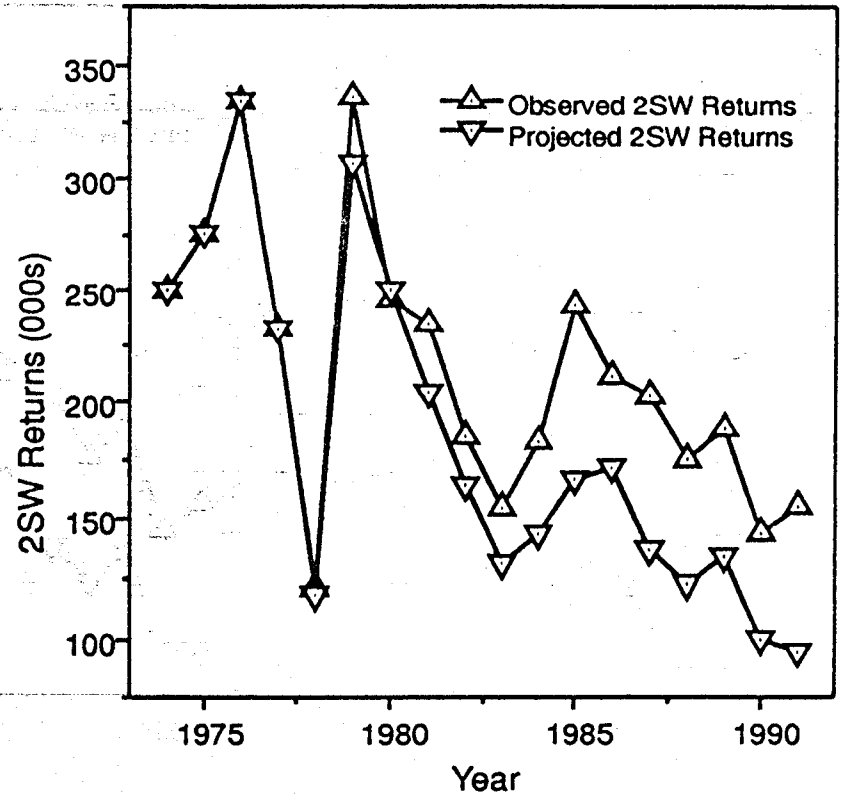


Figure 3.4.1.1. March index of overwintering habitat in the Labrador Sea from 1970-93.

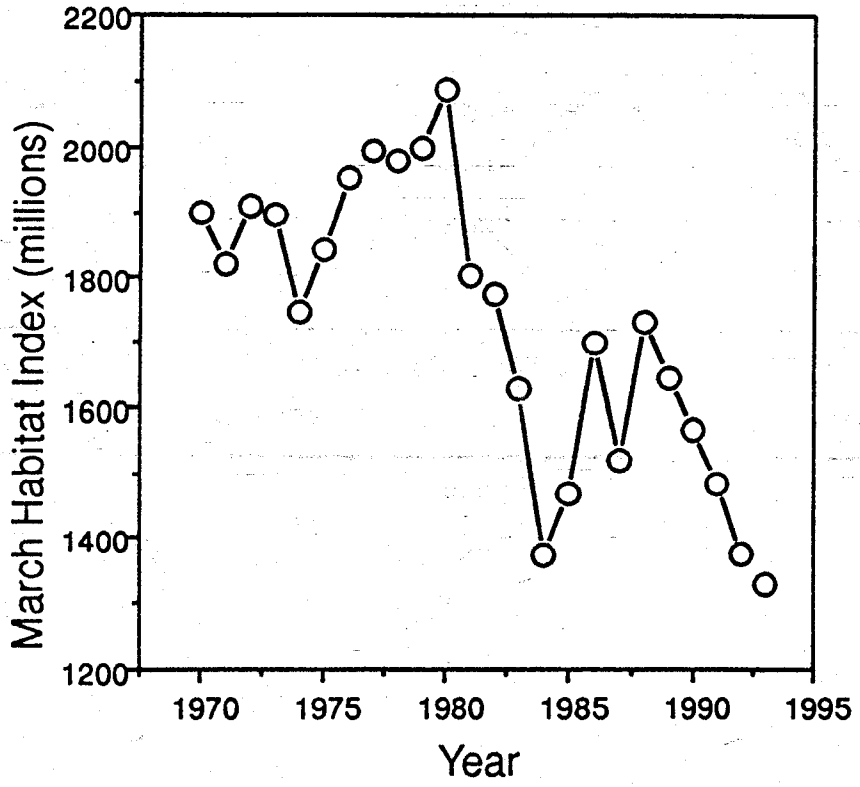


Figure 3.4.1.2. Pre-fishery abundance and predicted values based on habitat area in March (A). Relationship of pre-fishery abundance on weighted habitat area in March (B).

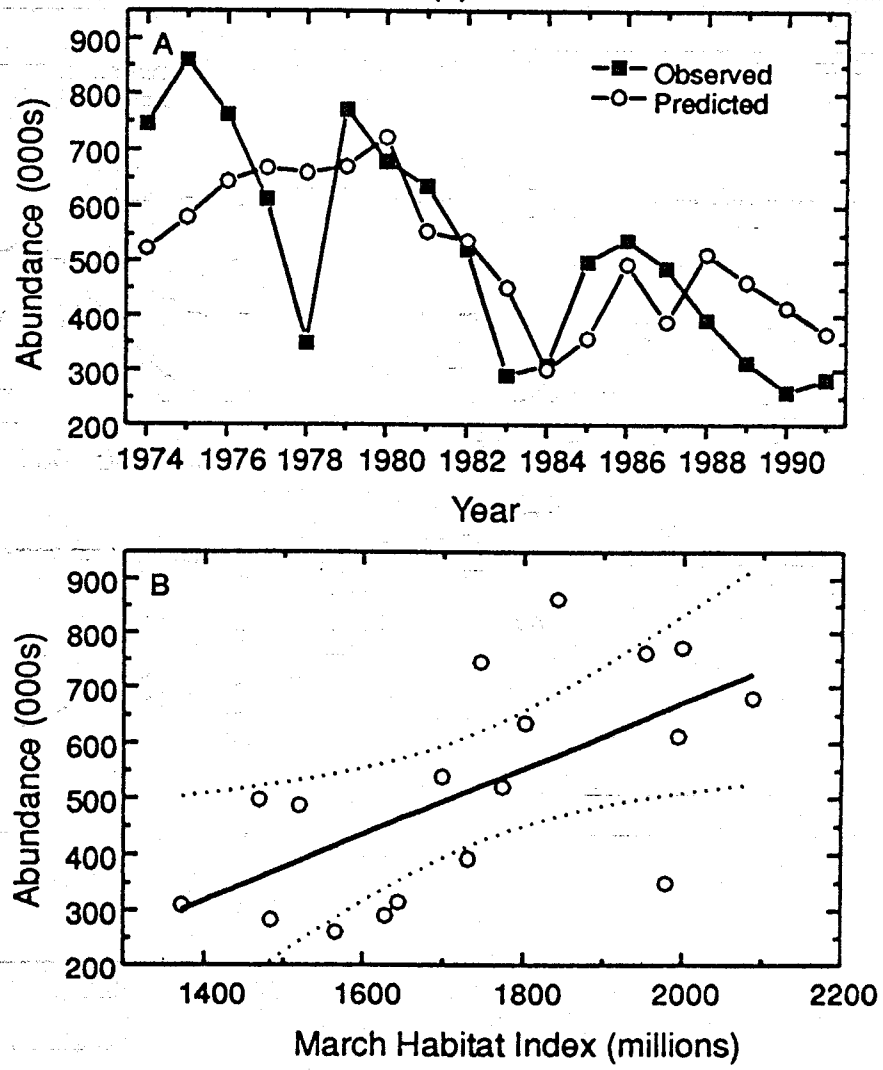


Figure 3.4.1.3. Estimates of pre-fishery abundance of non-maturing North American stock complex.

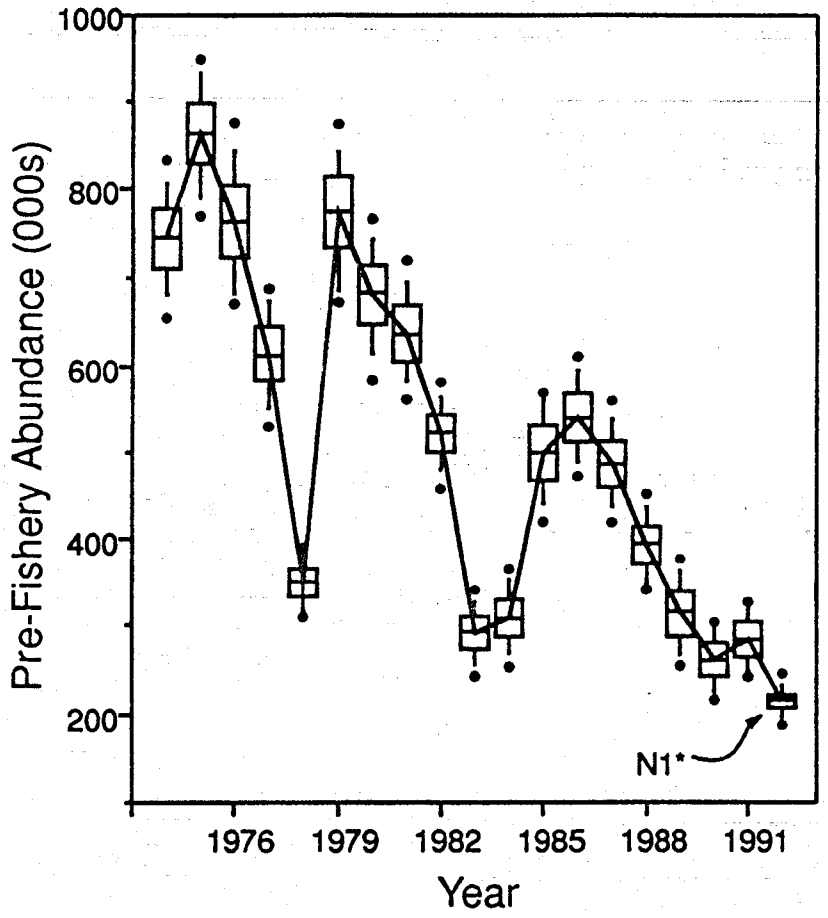


Figure 3.4.1.4. Univariate and regression forecasts of pre-fishery abundance in 1993. Dot centers indicate interquartile range of estimate, cross center indicates interquatile range of point estimates for stochastic forecasts only.

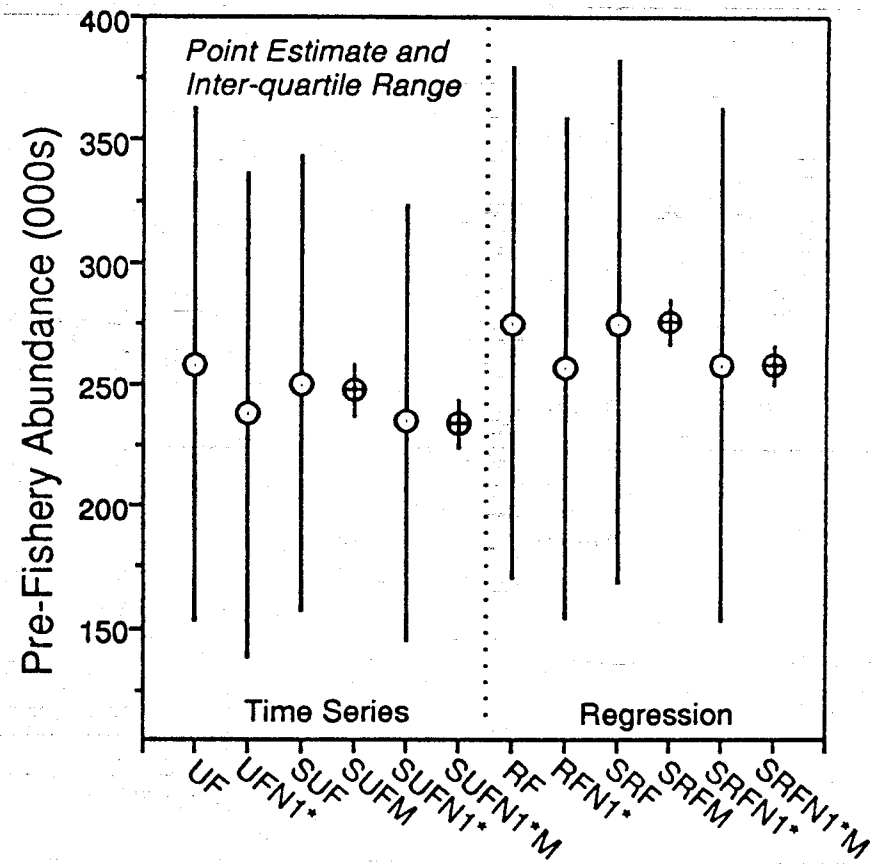


Figure 3.4.2 A probability density function of pre-fishery abundance on non-maturing stocks.

Panel C illustrates the amount of uncertainty associated with the estimate of pre-fishery abundance (PFA) in 1993. The Y-axis gives the probability (chance) that PFA is greater than any of the possible PFA values given on the X-axis. For example, there is a 75% chance that the true PFA is greater than 153,000 but only a 25% chance that the true PFA is greater than 363,000. The uncertainty in PFA implies that there will also be uncertainty in achieving the target spawning escapement level. For reference, the vertical line passing through each of the panels, gives the number of PFA fish (219,132) needed to ensure achievement of the target spawning escapement (196,306). However, the "risk" to the stock in terms of long-term productivity (or other factors) associated with not achieving this escapement is not illustrated by this figure.

In Panels A and B

The pre-fishery abundance level selected can be allocated with respect to the porportional allocation at West Greenland and North America.

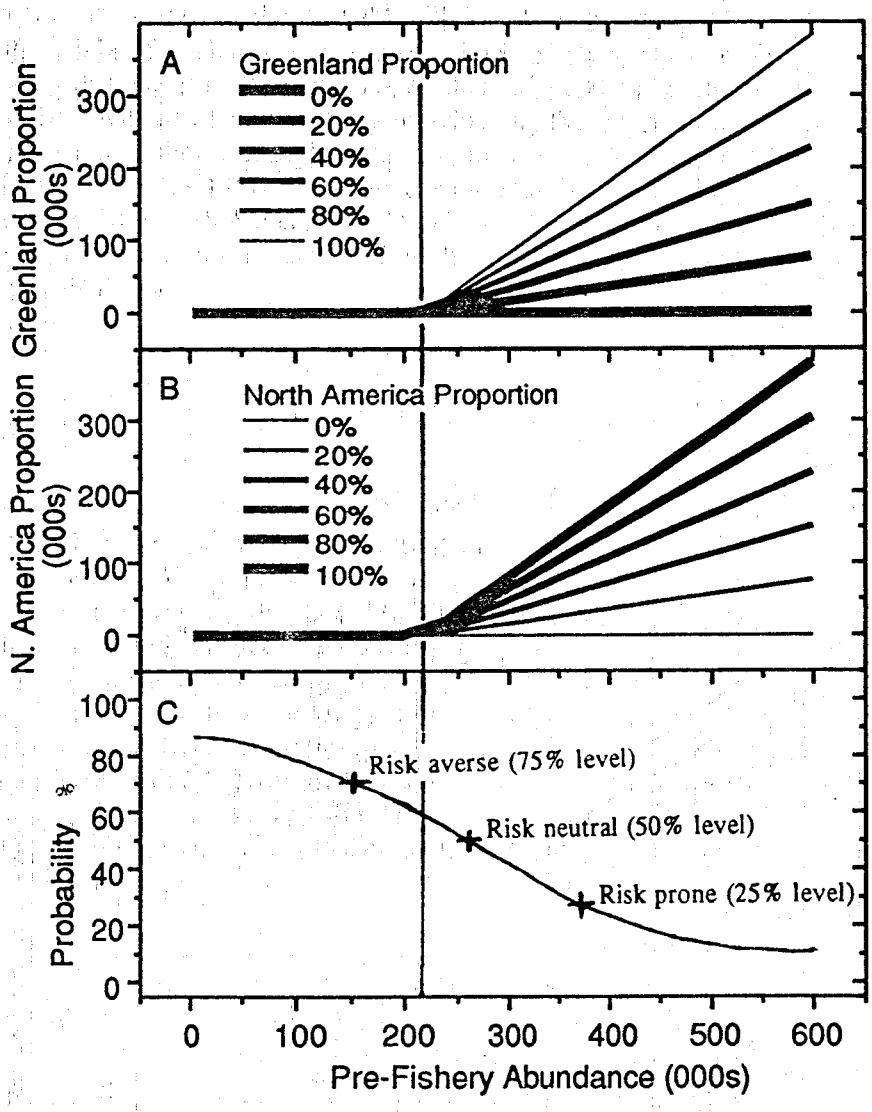


Figure 3.4.2.2. Predicted exploitation versus Greenland catch levels based on an assumed pre-fishery abundance level of 258,000.

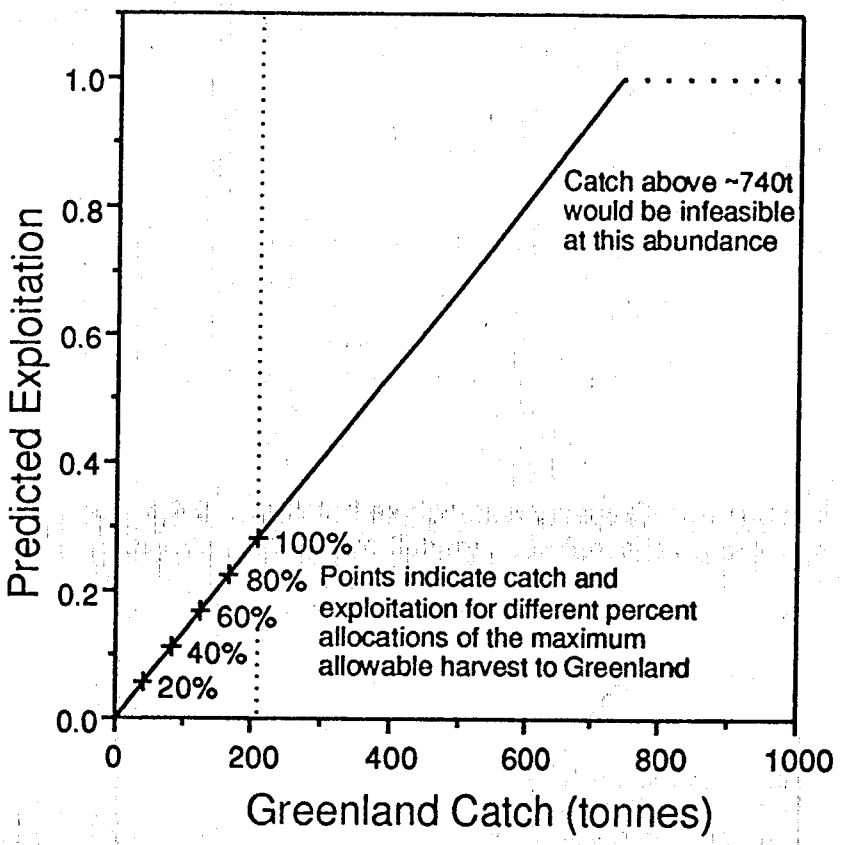


Figure 3.6.1. Reporting rate estimates at West Greenland based on comparison of Carlin and CWT recoveries.

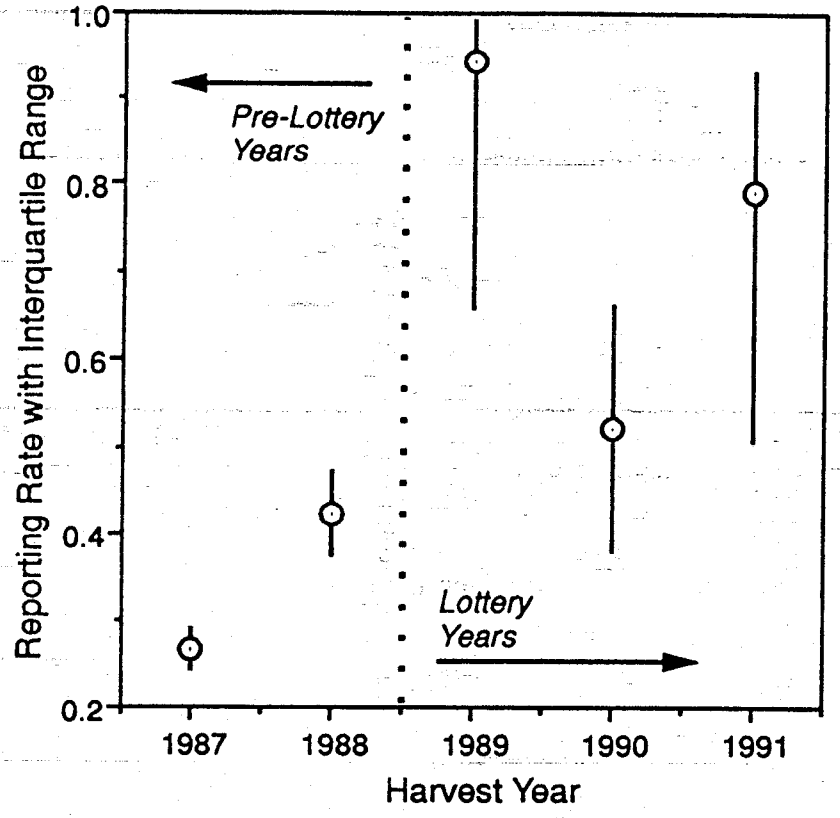
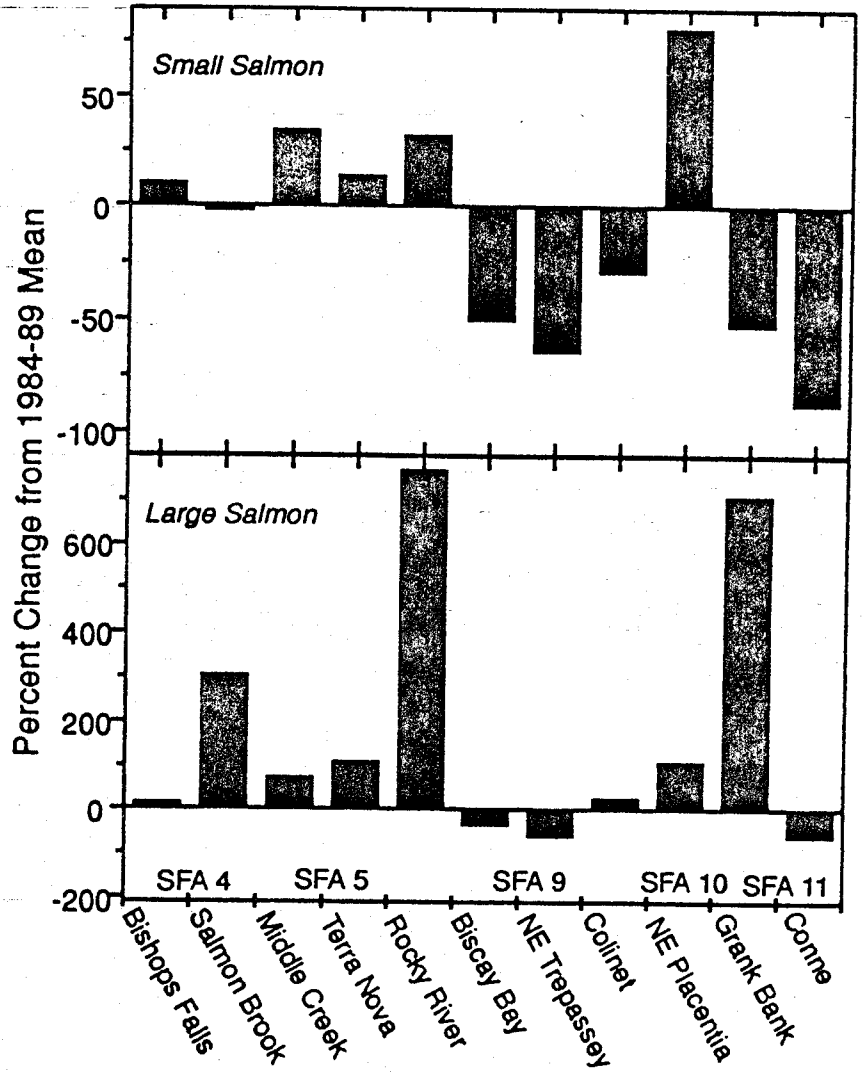


Figure 4.4.1.1. Counts of small and large salmon from fishways and counting fences in insular Newfoundland indicating 1992 returns as a percentage of 1984-89 mean.



ANNEX 4

WEST GREENLAND COMMISSION

WGC(93)9

PROPOSAL FROM THE CHAIR FOR EMERGENCY REGULATORY MEASURES IN THE WEST GREENLAND COMMISSION AREA

WGC(93)9

PROPOSAL FROM THE CHAIR FOR EMERGENCY REGULATORY MEASURES IN THE WEST GREENLAND COMMISSION AREA

The Parties sought an agreement on the West Greenland quota which reconciled the following principal considerations:

- An agreement should take effect in 1993;
- Quotas should be determined annually based on the best available scientific advice from ICES;
- A quota would adjust up or down relative to the best available scientific advice;
- A quota agreement should recognize a transition period to implement the significant adjustment required to accommodate new ICES advice given in 1993;
- A quota agreement should commit the Parties for a significant period and not be subject to change in its fundamental parameters unless agreed by the Parties.

The Parties recalled:

- Article 3.2 of the Convention that "the objective of the Organization shall be to contribute through consultation and cooperation to the conservation, restoration, enhancement and rational management of salmon stocks subject to this Convention, taking into account the best scientific evidence available to it."
- Article 9(g) to take into account "the interest of communities which are particularly dependent on salmon fisheries."

Accordingly, the Parties, in order to address the decline in abundance of wild stocks of Atlantic salmon and to provide adequate spawning stocks of 2SW fish to support sustainable populations, agree to establish an annual quota for each of the years 1993 to 1997 by application of the following mechanism:

The quota shall be based on scientific advice from the following sources, and applied in the following manner without prejudice to new advice from ICES:

- The ICES advice on the pre-fishery abundance of potential 2SW salmon of North American origin (and European origin if available).
- The ICES advice on the target spawning escapement reserve of potential 2SW salmon necessary to achieve target spawning escapement, or a different proportion of this reserve as agreed to by the Parties.

- Any surplus above the target spawning escapement reserve, or the proportion agreed to, may be available for harvest by the Parties.

- Allocation of the surplus shall be based on the average for the period 1986-1990 of the harvest share of potential 2SW salmon of North American origin caught at West Greenland (40%), or a different share if agreed upon by the Parties.

- Any other parameters used by the Parties shall be as advised by ICES.

The Parties, recognizing the difficulty of establishing a new catch quota for the 1993 West Greenland fishery at the levels recommended by ICES, hereby agree to a 1993 catch quota of 213 tonnes which is expected to achieve 72% of the ICES target spawning escapement reserve. This quota is expected to provide for an increase in the spawning escapement of approximately 50 percent over the average of the past 10 years.

For 1994 the Parties seek to achieve a minimum of 85% of the ICES target spawning escapement reserve level as advised by ICES at that time, and thereafter, the Parties will seek to achieve 100% of the ICES target spawning escapement reserve level. Any increase in the pre-fishery abundance advised by ICES for 1994 above that advised in 1993 will be applied first to increasing the percentage of the target spawning escapement reserve to be achieved in 1994.

ANNEX 5

TO: ALL HEADS OF DELEGATIONS AND REPRESENTATIVES

COPIED TO: DELEGATES AT TENTH ANNUAL MEETING

FROM: SECRETARY

RE: WEST GREENLAND COMMISSION OF NASCO
VOTE ON EMERGENCY REGULATORY MEASURE

1. The result of the textual vote on the proposed emergency regulatory measure contained in paper WGC(93)9 which I sent to you on 28 June 1993 is as follows:-

   Canada voted in favour

   Denmark (in respect of the Faroe Islands and Greenland) voted in favour

   The European Community voted in favour

   The United States voted in favour

   The measure is therefore unanimously adopted today, 30 June 1993.

2. Under the NASCO Convention (Article 13, paragraph 5), a Member of the Commission may object to an emergency regulatory measure within 30 days after the Commission has proposed it. Therefore an objection to this emergency measure must be received by 30 July 1993, in which case I would advise you of this situation and the measure would not be binding.

3. The Chairman of the West Greenland Commission, together with the President and the Secretary, would like to congratulate the Parties on the achievement of this measure which represents a valuable step forward for the Organization and which uses the scientific advances now available to the Commission.

Secretary
Edinburgh
30 June 1993

ANNEX 6

COUNCIL

CNL(93)50

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

CNL(93)50

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

1. With respect to Atlantic salmon in each Commission area, where relevant:

   a) describe the events of the 1993 fisheries with respect to catches (including unreported catches), gear, effort, composition and origin of the catch and rates of exploitation;
   b) describe the status of the stocks occurring in the Commission area, and where possible evaluate escapement against targets;
   c) specify data deficiencies and research needs.

2. Evaluate the following management measures on the stocks and fisheries occurring in the respective Commission areas:

   a) quota management and closures implemented after 1991 in the Canadian commercial salmon fisheries;
   b) the suspension of commercial fishing activity at Faroes.

3. With respect to the fishery in the West Greenland Commission area:

   a) continue the development of the model used in providing advice on catch quotas in relation to stock abundance;
   b) estimate the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery;
   c) provide catch options with an assessment of risks relative to the management objective of achieving various levels of target spawning escapement;
   d) describe which stocks make the greatest numerical contributions of salmon to the fishery;
   e) evaluate the relationship between spawning escapement and subsequent pre-fishery abundance.

4. Evaluate the abundance of fish farm escapees and sea-ranched fish in fisheries and rivers and the genetic, disease and parasite, ecological and environmental impacts of these fish on the wild stocks and any impacts from current hatchery practices.

5. Evaluate grilsification mechanisms and assess the impact that grilsification may have on stock abundance and future spawning requirements.

6. Evaluate evidence for recruitment overfishing occurring on Atlantic salmon populations.

7. Evaluate the prospects of developing predictive models of annual migration and distribution of Atlantic salmon stock complexes.

8. Evaluate the results of the research programme at the Faroes.

9. With respect to Atlantic salmon in the NASCO area, provide a compilation of microtag, finclip and external tag releases by ICES Member Countries in 1993.

WEST GREENLAND COMMISSION

PAPER WGC(93)4

NASCO TAG RETURN INCENTIVE SCHEME

1993 PRIZES

The draw for the 10 winners in the West Greenland Commission was made by the Auditor at NASCO Headquarters on 28 May 1993. At the Tenth Annual Meeting of the Commission in Edinburgh, the Chairman of the Commission, Mr David Egan, announced the winners:

First prize - $1500 - Svend Peter Sorensen, Cpr No 090755-2535, B519, 3932 Arsuk, Greenland

Second prize - $1000 - Helmuth Fontain, B-753, 3932 Arsuk, Greenland

Third prize - $500 - Jens Egede Sikemsen, per Karen Lervad Nielsen, Greenland Fisheries Research Institute, Tagensvej 135, Copenhagen, DK 2200, Denmark

Fourth prizes - $100 -

Jens Kristiansen, 3912 Maniitsoq, Napasoq, Greenland

Lars Eigildsen, Jakob Berthelsenvej, 3940 Pamiut, Greenland

Adam Johnsen, 3912 Maniitsoq, Napasoq, Greenland

Johannes Jensen, 3932 Arsuk, Greenland

Inge Benedicte Rendtorff, Vesterbrogade 70 III TV, 1620 Copenhagen V, Denmark

James Mathaenssen, Cpr No 220533 - 2025, 3912 Maniitsoq, Kangamiut, Greenland

Angunnguaq Jokumsen, Qassimiut, 3920 Qaqortoq, Greenland

The Commission offers its congratulations to the winners.

ANNEX 8

LIST OF WEST GREENLAND COMMISSION PAPERS

Paper No.	Title
WGC(93)1	Provisional Agenda
WGC(93)2	Draft Agenda
WGC(93)3	Draft Report of the Tenth Annual Meeting
WGC(93)4	NASCO Tag Return Incentive Scheme - 1993 Prizes
WGC(93)5	Draft Proposal by Denmark (in respect of the Faroe Islands and Greenland) for Developing a Rational Approach to the Management of Salmon at West Greenland
WGC(93)6	Questions of Interest to the West Greenland Commission of NASCO
WGC(93)7	Figures used by the Chairman of ACFM in his Presentation to the Commission
WGC(93)8	Agenda
WGC(93)9	Proposal from the Chair for Emergency Regulatory Measures in the West Greenland Commission Area
WGC(93)10	Report of the Tenth Annual Meeting
CNL(93)13	Report of the ICES Advisory Committee on Fishery Management

NOTE This list contains all papers submitted to the Commission prior to and at the meeting. Some, but not all, of these papers are included in this report as annexes.